PIONEER
The Art of Entertainment

• DEH-790SDK/WG

HIGH-POWER COMPACT DISC PLAYER WITH FM/AM TUNER

DEH-790SDK WG
DEH-790 EW, X1B
DEH-690SDK WG
DEH-690 EW, X1B

COMPACT
disc
DIGITAL AUDIO

• See the service manual DEH-M980/UC (CRT1450) for the CD mechanism description and circuit description.

CONTENTS

SAFETY INFORMATION (EW MODEL)

1. Safety Precautions for those who Service this Unit.

*   Follow the adjustment steps(see pages 14 through 33)in the service manual when servicing this unit. When checking or adjusting the emitting power of the laser diode exercise caution in order to get safe, reliable results.

Caution:

1. During repair or tests, minimum distance of 13cm from the focus lens must be kept.
2. During repair or tests, do not view laser beam for 10 seconds or longer.

2. A "CLASS 1 LASER PRODUCT" label is affixed to the bottom of the player.

3. The triangular label is attached to the mechanism unit arm unit.

4. Specifications of Laser Diode

Specifications of laser radiation fields to which human access is possible during service.

Wavelength = 785 nanometers

Radiant power = 69.7 microwatts
(Through a circular aperture stop having a diameter of 80 millimeters)

0.55 microwatts
(Through a circular aperture stop having a diameter of 7 millimeters)

1. SPECIFICATIONS

General

Power source .... 14.4 V DC (10.8 – 15.6 V allowable)
Grounding system .... Negative type
Max. current consumption .... 5.5 A
Dimensions (chassis) .... 180(W) × 50(H) × 150(D) mm
　　　　　　 (front face) .... 188(W) × 58(H) × 18(D) mm
Weight .... 1.5 kg

Amplifier

Max. power output .... 30 W × 2 (EIAJ)
Continuous power output .... 14 W × 2
　　　　　　　　　　　　　　　　　　　　 (1 % dist. at 1 kHz)
Load impedance .... 4 Ω (4 – 8 Ω allowable)
Nominal output level/
　 output impedance (pre out) .... 500 mV/1 kΩ
Tone controls (bass) .... ±12 dB (100 Hz)
　　　　　　　 (treble) .... ±12 dB (10 kHz)
Loudness contour .... +10 dB (100Hz), + 6.5 dB (10 kHz)
　　　　　　　　　　　　　　　　　　　 (volume: – 30 dB)

CD player

System.............................. Compact disc audio system
Usable discs .... Compact disc
Signal format .... Sampling frequency: 44.1 kHz
　　　　　　　　 Number of quantization bits: 16; linear
Frequency characteristics .... 5 – 20,000 Hz (±1 dB)
Signal-to-noise ratio .... 94 dB (1 kHz) (IEC-A network)
Dynamic range .... 90 dB (1 kHz)
Number of channels................................... 2 (stereo)

FM tuner

Frequency range .... 87.5 – 108 MHz
Usable sensitivity .... 11 dBf (1.0 μV/75 Ω, mono, S/N: 30 dB)
50 dB quieting sensitivity .... 16 dBf (1.7μV/75 Ω, mono)
Signal-to-noise ratio .... 70 dB (IEC-A network)
Distortion .... 0.3 % (at 65 dBf, 1 kHz, stereo)
Frequency response .... 30 – 15,000 Hz (± 3 dB)
Stereo separation .... 40 dB (at 65 dBf, 1 kHz)

MW tuner

Frequency range................................. 531 – 1,602 kHz
Usable sensitivity...................... 18 μV (25 dB) (S/N: 20 dB)
Selectivity .... 50 dB (± 9 kHz)

LW tuner

Frequency range .... 153 – 281 kHz
Usable sensitivity .... 30 μV (30 dB) (S/N: 20 dB)
Selectivity .... 50 dB (± 9 kHz)

Note:

Specifications and the design are subject to possible modification with-out notice due to improvements.
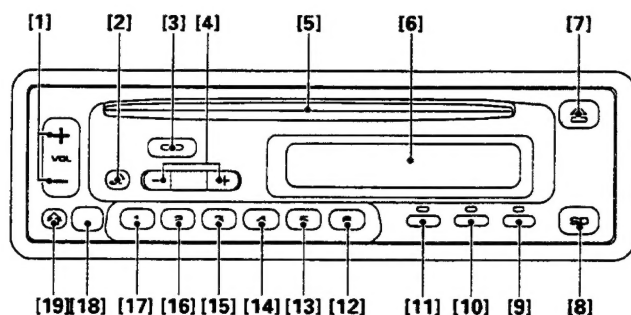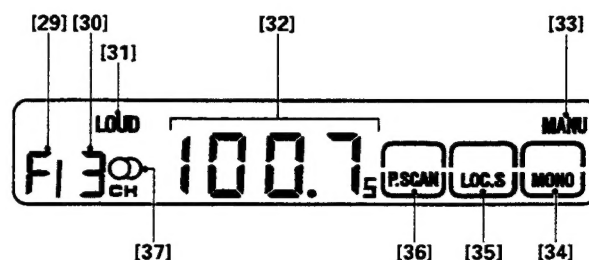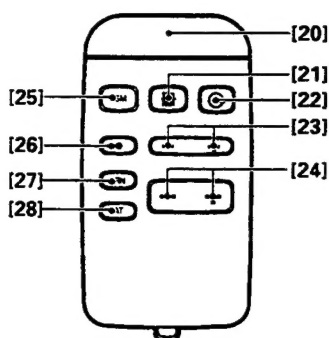
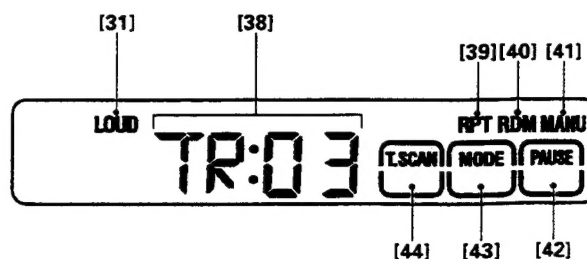## • Parts Identification

Fig. 1

Fig. 3

Fig. 2

Fig. 4

2. ADJUSTING VOLUME AND TONE

Parts Identification (Fig. 1)
[1] Volume/ Audio adjustment
[2] Shift/Loudness
[3] Illumination switch
[5] Disc Insertion Slot
[6] Display
[7] Eject
[8] Source selector

Switching Power On
Tuner
Press button [8] to switch the tuner power on. Press button [8] again to switch the power off.

CD Player
When a disc is inserted half-way into the disc insertion slot [5] with its label side upward, the disc is automatically loaded and played. To remove the disc, push button [7].

Changing the source
To change the source, push button [8] with the disc inserted in the slot.
At each press of the button, the source changes as follows: CD player — Tuner — OFF.

Adjusting Audio
Press button [1] to adjust the volume. Each press of button [2] changes the display and the function of button [1] as follows:
Volume — Fader — Bass — Treble — Balance

Adjusting Volume
Pressing the (+) side of button [1] increases the volume, while the (-) side decreases it.
(Display shows "V–00" ~ "V–30".)
• *When driving your vehicle, be sure to keep the volume of the unit set low enough to allow you to hear sounds coming from outside.*

Adjusting the Fader
Balancing the sound volume between the front and rear speakers.
Gradually transfer the sound to the front speaker by holding down the (+) side of button [1]. Gradually transfer the sound to the rear speaker by holding down the (-) side of button [1].
(Display shows "F–R9" ~ "F–F9".)
• Please set "F- 0" when using a 2-speaker system.

Adjusting Bass
Pressing the (+) side of button [1] increases bass, while the (-) side decreases bass.
(Display shows "BS–6" ~ "BS+6".)

Adjusting Treble
Pressing the (+) side of button [1] increases treble, while the (-) side decreases treble.
(Display shows "TR–6" ~ "TR+6".)

Adjusting Balance
Pressing (+) side of button [1] shifts the balance to the left speaker, while the (-) side shifts it to the right speaker.
(Display shows "B–R9" ~ "B–L9".)

• *When you're adjusting fader, bass, treble, or balance settings, the indicator will stop at the center setting. About 5 seconds after adjustment has been made, the display returns to its previous state.*

Using the Loudness Function
Press button [2] for about 2 seconds and the "LOUD" indication will appear on the display. This loudness function lets you enhance both high and low frequencies to give a more natural sound at low volumes. To cancel this function, press button [2] again for about 2 seconds.

Switching Illumination Colour
Pressing button [3] for more than 2 seconds causes the illumination color to switch between green and amber.

3. USING THE RADIO

Parts Identification
Fig. 1
[3] Band
[4] Tuning/Local seek sensitivity/ Seek, Manual
[6] Display
[8] Source selector
[9] FM stereo/Mono
[10] Local station
[11] Preset scan/ Best stations memory (BSM)
[12]~[17] Preset

Fig. 3
[29] Band
[30] Preset number
[32] Frequency
[33] Manual
[34] FM mono
[35] Local station
[36] Preset scan
[37] FM stereo

Listening to the Radio
1. Turn on the tuner's power by pressing button [8].
Each time the button is pushed the main unit switches between tuner and power off modes.

- This operation will differ if there is a CD inserted in the CD player. Refer to the section on the source switch on page 5 for details.

2.Press Button [3] to select a band.

$$F\ I \rightarrow F\ II \rightarrow F\ II \rightarrow M/L$$

(FM1)　(FM2)　(FM3)　(MW/LW)

Use button [4] to switch between MW (531-1,602 kHz) and LW (153-281 kHz).

3.Use seek tuning to tune in a frequency.
Ensure that "MANU" [33] is not indicated on the display. (If so, turn it off by simultaneously pressing the (+) and the (–) sides of button [4]).
Press either the (+) side or the (–) side of button [4]. When the (+) side is pressed, the tuner will automatically receive high frequencies.
When the (–) side is pressed, it will automatically receive low frequencies.

4.Adjust volume and tone (see page 5).

5.Assign the tuned frequency to one of the Buttons in Bank [12]~[17] (preset memory).
Press and hold down one of the buttons in Bank [12]~[17] for at least 2 seconds. The frequency is assigned to the selected button when the preset number [30] stops flashing on the display. Up to 18 FM stations (6 each for FM1, FM2 and FM3), and six MW/LW stations can be assigned to the preset memory buttons in Bank [12]~[17].

6.Once a frequency is assigned to a Button in Bank [12]~[17], you just need to press that Button to tune it in.
This also causes the number of the button pressed to appear at Position [30] on the display.

Adjusting Seek Sensitivity

The seek tuning function of this tuner lets you select between a local setting for reception of strong stations only, and a DX (distant) setting for reception of weaker stations. The local setting also has 4 seek tuning sensitivity levels for FM and 2 levels for MW/LW to match local conditions.

Changing the Local Seek Sensitivity
1.Use button [3] to select a band.
2.Hold down the button [10] for more than 2 seconds, and the display will show you the current local seek sensitivity (Example: "LOC-2") for about 5 seconds.
3.While the local seek sensitivity remains on the display, press the (+) side of button [4] to increase the sensitivity level, and the (–) side to decrease the level as shown below.
FM : LOC-1 ⇌ LOC-2 ⇌ LOC-3 ⇌ LOC-4
MW/LW: LOC-1 ⇌ LOC-2
The LOC-4 setting allows reception of only the strongest stations, while lower settings let you receive progressively weaker stations.

- The display of local seek sensitivity returns to the frequency when about 5 seconds have elapsed after the change of sensivity.

Switching between Local and DX
Press button [10] to switch between Local and DX (distant) seek tuning. When the frame of local seek [35] is lit, seek tuning is performed with the local seek sensitivity. Otherwise, seek tuning is performed with the DX seek sensitivity.

Manual Tuning

Use manual tuning when stations are too weak to be picked up by seek tuning.
1.Turn on "MANU" [33] by simultaneously pressing the (+) side and the (–) side of button [4].
2.Each press of the (+) side of button [4] increases the frequency in 50 kHz steps in the FM band, 9 kHz in the MW band and 1 kHz in the LW band. Pressing the (–) side of button [4] decreases the frequency. Holding down either side of button [4] changes the frequency at high speed.

Switching between FM Stereo and Mono

Generally, it is best to allow the ARC (Automatic Reception Control) function to automatically set the optimum listening conditions. ⓓ [37] turns on during stereo broadcast is in reception. When there is a large amount of noise, you can press button [9] for clearer mono reception (The frame of FM mono [34] turns on).

BSM (Best Stations Memory)

This function automatically locates stronger stations and automatically assigns their frequencies to the buttons in Bank [12]~[17], from strongest to weakest. It comes in handy when trying to find local stations while driving.
1.Press button [3] and select a band.
2.Hold down button [11]. After about 2 seconds, a"beep" will sound to signal that the BSM search has started. At this time, "BSM" will flash on the display.
3.The frequency display will return once BSM search is complete, and frequencies are assigned to buttons 1 through 6 in Bank [12]~[17].
- At the end of the BSM search, the displayed frequency is that assigned to button ⓵ of Bank [12]~[17].
- You can cancel BSM search by pressing button [11] again.
- *If there are fewer than 6 strong stations in the area, some of the buttons in Bank [12]~[17] will not be assigned frequencies, so they will retain any frequencies assigned to them previously.*
- *BSM search may take as long as 30 seconds in areas where there are few strong stations.*

Preset Scan Tuning

This function lets you automatically monitor the stations assigned to the preset buttons.
1.Pressing button [11] turns on the frame of preset scan [36] and flashes preset number [30].
Each station assigned to the buttons in Bank [12]~[17] will be automatically tuned in for about 8 seconds.
2.When you hear a station that you like, press button [11] again to cancel preset scan tuning and remain at that station.

4. PLAYING COMPACT DISCS

Parts Identification

Fig. 1
[4] Track number search/
    Fast forward, Reverse
[5] Disc insertion slot
[6] Display
[7] Eject
[8] Source selector
[9] Pause
[10] Mode
[11] Highlight scan

Fig. 4
[38] Track number
[39] Music repeat
[40] Random play
[41] Manual
[42] Pause
[43] Mode
[44] Highlight scan

Discs

• Only use compact discs (optical digital audio discs) bearing the mark shown below. (Fig. 5)

Fig. 5

• Be sure never to touch the signal surface when handling discs. Pick up discs by grasping the outer edges or the edge of the hole and the outer edge. (Fig. 6) (Fig. 7)
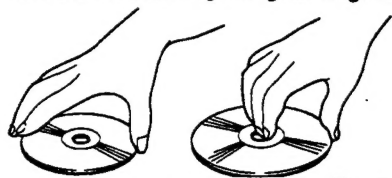

Fig. 6   Fig. 7

• Do not affix paper or tape, and avoid scratching the side of the disc which contains the label (contents of disc).
• The disc revolves at high speed within the player unit, so defective (cracked or badly bent) discs should not be used.
• Dust and/or finger smudges will have no direct effect on the signal recorded on the disc, but dirt can decrease the amount of light reflected from the recorded surface, thus affecting sound quality. If the disc should become soiled, gently wipe the surface with a soft lint-free cloth, wiping from the center of the disc to the edge. (Fig. 8)
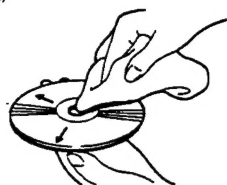

Fig. 8

• Do not use record sprays or antistatic agents. Such volatile chemicals as benzine and thinner can also damage the surface of the disc and should not be used.

• As with traditional audio records, compact discs are made of plastic. To avoid warping, keep the discs in their cases and do not store them in places exposed to direct sunlight.

Listening to the Compact Disc

1. **On inserting the CD, with the label side up, half way into the CD slot [5], it will automatically be set into position and start to play.**
The track number [38] indicator will light.
2. **Adjust volume and tone (see page 5).**
3. **To stop CD playback, press button [8] turning the power off.**
Pressing the button will change the source as follows: CD Player — Tuner — OFF.
Press button [8] again to restart playback. It will play from close to where it was previously stopped.
4. **To remove or change discs, press button [7].**
When the disc is ejected, pressing it will cause it to be set into position again, and playback to start.

Note:
• In order to protect the disc, eject it after it has stopped rotating. The timing of ejection may differ according to the disc.
• If a disc can only be inserted halfway, or if the disc does not play after being loaded, something may be wrong with the disc. Eject the disc by pressing button [7], and check it. If it is all right, insert it again.

• Insert the disc with its label (printed) side facing up. If the disc is inserted with the label side facing down, it will not play, and the recorded side may be damaged.
• Do not insert 2 discs into the slot at the same time. This may cause a malfunction.
• Do not leave an ejected disc in the insertion slot for extended periods since direct sunlight can cause warping. Always return discs to their cases and store in areas not exposed to direct sunlight.

Discs should not be left like this for extended periods.

• Do not leave an ejected 8-cm CD in the slot while driving. The vibration may make it drop out.
• When driving on an uneven road, the player may not reproduce every sound property.

Condensation
• During winter the inside of the vehicle may be very cold. If the heater is turned on and the player is used soon after, the disc or optical parts (prism, lens, etc.) may became misted up. If the disc is misted up, wipe it with a soft cloth. If the optical parts are misted up, wait for about an hour for them to worm up. They will return to their normal condition.

Track Number Search

The desired track on the disc currently being played can be selected by track (or song) number.

1. Ensure that "MANU" [41] is not indicated on the display. If so, turn it off by simultaneously pressing the (+) side and the (–) side of button [4].
2. Use the button [4] to select a track. Pressing the (+) side increases the track number [38], and pressing the (–) side decreases it. Holding the button down continuously increases or decreases the track number.

Using Fast Forward and Reverse

1. Press simultaneously both (+) and (–) sides of the button [4]. "MANU" [41] will appear on the display. At this time the display will show the amount of elapsed disc play time (Example: "01'05"").
2. Press the (+) side of button [4] for fast forward, and the (–) side for reverse.
- Sound is output during fast forward and reverse operations.
- When a disc in which there are several seconds between tracks is used, the amount of elapsed disc-play time is shown, for example, as "–'02"", "–'01"" and "–'00"".

Pausing

1. Press button [9] to pause during disc playback (Track number [38] will change to "----", and "PAUSE" [42] frame appears).
2. Press button [9] again to release pause.
- It is possible to select music even during pause by using the track number search ("----" [38] will change to Track number, and "PAUSE" [42] frame turns off while the music is being selected).
When the selection is completed, the playback will be paused at the beginning of the music.

Using Highlight Scan

Highlight Scan is designed to enable you to conveniently scan all pieces of music contained in the disc by playing 10 seconds each at your designated point of time after the start of the music. The starting time of play is set at one minute in factory. Therefore, the Highlight Scan begins one minute after the start unless you designate it otherwise.
When you do not want to change the factory-set time:

1. Pressing Button [11] turns on the frame of Highlight Scan [44].
2. The contained pieces of music will be played in sequence for 10 seconds each one minute after the beginning.
3. Press Button [11] again when your selected piece comes, and it will continue to play. At this point, the Highlight Scan discontinues to operate.
- The previous function automatically resumes when a piece of music with which Highlight Scan began returns.

Changing the Starting Time of Highlight Scan

When you want to set the starting time of the Highlight Scan to 30 seconds:

1. Indicate "MANU" [41] on the display by simultaneously pressing the (+) side and the (–) side of button [4].
2. Keep pressing either (+) or (–) side of Button [4] until the numerals reaches 30.
3. Pressing Button [11] for 2 or more seconds, turns on the frame of Highlight Scan [44].
Highlight Scan will begin 30 seconds after the start of the next piece of music.
- The starting time of Highlight Scan can be designated at ten or tens of seconds only. A tenth or tenths of seconds can be disregarded.
- If a piece of music ends before your designated point of time at which Highlight Scan starts, the scanning is performed for its beginning 10 seconds.
- If a piece of music lasts less than 10 seconds, so does the Highlight Scan.
- You may wish to change the starting time longer without suspending the function. You may do so, however, only to a relatively long-playing piece of music because, as a matter of course, the time cannot be set so as to come after the end of the music.

Using Music Repeat and Random Play

Each Press of button [10] causes the mode to change as follows: Music Repeat, ("RPT" [39] and "MODE" [43] frames appear.) — Random Play ("RDM" [40] and "MODE" [43] frames appear) — Normal ("MODE" [43] frame turns off).

Music Repeat

1. To repeat the music you are listening to, select the repeat mode ("RPT" [39] appears).
2. To cancel music repeat, press button [10] to turn off "RPT" [39].
- When music repeat is not operational, the whole disc will be played repeatedly.

Random Play

1. To play music randomly, select the random play mode ("RDM" [40] appears). Once the current track has been played, the microprocessor will randomly select the next and subsequent tracks.
2. To cancel random play, press button [10] to turn off "RDM" [40].
- *Since selections are played in random order, the same selection may be played twice in succession.*

5. USING THE REMOTE CONTROL

Note:
Remote control is only available on DEH-790.
DEH-690 does not have remote control
function.

[18] Remote control sensor

[20] Transmitter

[21] Tuner
The tuner is selected. Pressing again turns
off the power.

[22] CD
When a disc is inserted in the built-in CD
player, the unit will switch to disc play
mode. Pushing the button once again turns
the power off.

[24] Volume
Press the (+) side to increase volume and
the (-) side to decrease volume.

[27] Learn Button
Takes on the function of the button opera-
tion recorded with the learning function.
Refer to the "Learning Function" section for
details.

[28] Attenuator
Press to reduce the volume to 1/10 of its
current setting (volume display flashes).
Pressing again returns the volume to its
original level.
• This function is available using the re-
mote controller unit only.

Operating the Tuner
[23] Preset Channel
Press to tune the frequencies assigned to
the preset button memory. Pressing the (+)
side tunes in the next high preset button
number, while (-) tunes in the next lower
preset button number. The preset number
changes at high speed when you hold ei-
ther side of this button down.

[25] Best Stations Memory
Hold on this button for about 2 seconds,
and you will hear a beep and see Best
Stations Memory start.

[26] Band
Band changes.

$$F_I \rightarrow F_{II} \rightarrow F_{III} \rightarrow M/L$$
(FM1) (FM2) (FM3) (MW/LW)

Operating the CD Player
[23] Track Number Search
Press to search for a selection (track num-
ber) on the current disc. Press the (+) side
to increase the track number on the display,
and the (-) side to reduce the track number.
Holding down either side of this button
changes the track number at high speed.

Learning Function
Records one button from the main unit on
the remote control's learn button. This can
be convenient when a button which is used
often is recorded.
1. While playing the CD, press button [10]
   on the main unit for about 2 seconds, un-
   til a beep is emitted. "LRN" will be dis-
   played on the display.

   • While the radio is on, the button can not
   be recorded on to the remote control's
   learn button.
2. Press the button on the main unit that
   you want to use on the remote control.
3. Press the learn button [27] on the remote
   controller unit. The main unit button
   recorded can now be used from the re-
   mote control.
   • Perform button recording while "LRN" is
   displayed. If about 5 seconds pass with-
   out a button being recorded, the "LRN"
   display will clear, and the previously
   recorded button will remain in memory.

6. USING THE CLOCK DISPLAY

Parts Identification (Fig. 1)
[6] Display
[9] Clock
[16] Minute Adjustment
[17] Hour Adjustment

Displaying the Time
The clock is displayed when button [9] is.
pressed (for more than 2 seconds) till it
beeps. Following the same procedure will
turn off clock display.
• The clock display can be used only when
the main unit is in operation.
• When the clock display is ON, pressing
other buttons will release the clock dis-
play. The display will be restored approxi-
mately 25 seconds after the button opera-
tion has been completed.

Adjusting the Time
Adjusting the Hours
Press button [9] till it beeps (for more than 2
seconds). While pressing button [9], press
button [17] simultaneously to adjust the
hour setting of the clock. Each press of but-
ton [17] advances the hour setting by one
hour, and holding it down advances the set-
ting at high speed.

Adjusting the Minutes
Press button [9] till it beeps (for more than 2
seconds). While pressing button [9], press
button [16] simultaneously to adjust the
minute setting of the clock. Each press of
button [16] advances the minute setting by
one minute, and holding it down advances
the setting at high speed.

7. DISASSEMBLY

● Removing the Case Assy
1. Remove the three screws.
2. Insert and turn a flat screwdriver to remove the case.
3. Raise the case to remove.

Fig. 9

● Removing the Grille Assy
1. Press the tabs at four locations indicated by arrows, and then pull out the grille assy. (Fig.9)
2. Disconnect the connector.

Fig. 10

● Removing the Display Unit
1. Remove the four screws A.
2. Press the tabs at four locations indicated by arrows, and then raise the cover to remove.
3. Remove the two screws B.
4. Press the tabs at two locations indicated by arrows, and then raise the display unit to remove.

Fig. 11

● Removing the CD Mechanism Module
1. Disconnect the connector.
2. Remove the four screws, and then remove the CD mechanism module.

Fig. 12

● Removing the Tuner Amp Unit
1. Remove the five screws C and four screws D.
2. Remove the heat sink.
3. Remove the screw E.
4. Remove the screw F, and then remove the holder.
5. Unbend the tabs at four locations indicated by arrows until straight.
6. Raise up on tuner amp unit to remove it from the chassis unit.

Fig. 13

8. BLOCK DIAGRAM

• DEH-790SDK

Fig. 14

9. CONNECTING THE UNIT

Fig. A

Fig. B

Note:
- Before making final connections, make temporary connections then operate the unit to check for any connecting cord problems.
- Refer to the owner's manual for details on connecting the various cords of the power amp and other units, then make connections correctly.
- Be sure to connect the memory power supply lead (orange) to a terminal that is always supplied with power regardless of the vehicle's ignition switch position. If this connection is made incorrectly or is forgotten, the unit will not work at all.
- Don't pass the orange lead through a hole into the engine compartment to connect to the battery. This will damage the lead insulation and cause a very dangerous short.
- Since a unique BPTL circuit is employed, never wire so the speaker leads are directly grounded or the left and right speaker ⊖ leads are common.
- Speakers connected to this unit must be high-power types possessing minimum rating of 30W and impedance of 4 to 8 ohms. Connecting speakers with output and/or impedance values other than those noted here can damage the speakers.
- When the unit is mounted in a vehicle whose ignition switch does not have the ACC (accessory) position as shown in Fig. B, be sure to connect the red lead of the unit to the terminal controlled by the ignition switch ON/OFF position. If you do not, the vehicle battery may go flat when you leave your vehicle for several hours.
  ACC position (Fig. A)
  No ACC position (Fig. B)

2/4-speaker system (Fig. 15)
- When using only a single power amp (sold separately), connect the rear output cord to the main amp. (DEH-790SDK and DEH-790)

External 4 channel amp system (DEH-790SDK and DEH-790) (Fig. 16)
- Optional front speakers can be connected as illustrated with in the "----", to make it a 6-speaker system.
  In this case, fader function of this unit will control the volume balance between the 4 front speakers and the 2 rear speakers.

1. Front out
2. Rear out
3. Red
4. White
5. No connection in this type of system. (These leads are included with the DEH-790SDK and DEH-790.)
6. Antenna jack
7. Black (ground)
   To vehicle (metal) body.
8. Red
   To electric terminal controlled by ignition switch (12 V DC) ON/OFF.
9. Orange
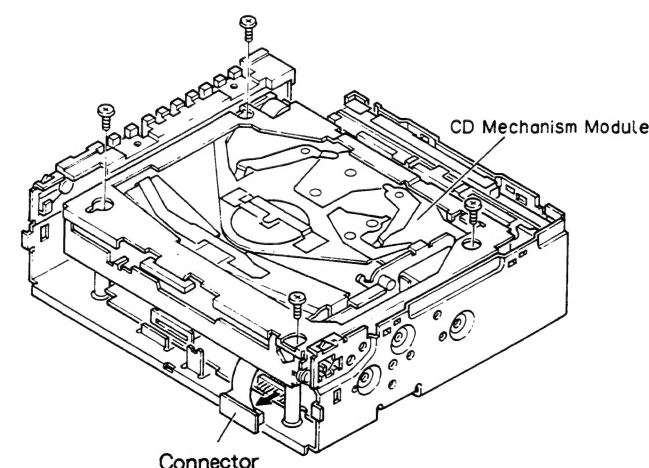   To terminal always supplied with power regardless of ignition switch position.
11. Blue
   To system control terminal of the power amp (4-speaker system) or Auto-antenna relay control terminal (Max. 300 mA 12 V DC).
12. Fuse resistor
13. Fuse holder
14. Connecting cords with RCA pin plugs (sold separately)
15. Power amp (sold separately)
16. Blue
17. Not connected to anything for 2-speaker system.
18. Green
19. Green/Black
20. Gray
21. Gray/black
22. Front/left speaker
23. Front/right speaker
24. Rear/left speaker
25. Rear/right speaker
26. Blue
   To system control terminal of the power amp.
27. No connection in this type of system.

Fig. 15

Fig. 16

13

10. ADJUSTMENT

1)Precautions

- This unit uses a single power supply (+5V) for the regulator. The signal reference potential,therefore,is connected to REFOUT(approx. 2.5V) instead of GND.

  If REFOUT and GND are connected to each other by mistake during adjustments,not only will it be impossible to measure the potential correctly,but the servo will malfunction and a severe shock will be applied to the pick-up. To avoid this,take special note of the following.

  Do not connect the negative probe of the measuring equipment to REFOUT and GND together. It is especially important not to connect the channel 1 negative probe of the oscilloscope to REFOUT with the channel 2 negative probe connected to GND.

  And since the frame of the measuring instrument is usually at the same potential as the negative probe,change the frame of the measuring instrument to floating status.

  If by accident REFOUT comes in contact with GND,immediately switch the regulator or power OFF.

- Always make sure the regulator is OFF when connecting and disconnecting the various filters and wiring required for measurements.

- Before proceeding to further adjustments and measurements after switching regulator ON,let the player run for about one minute to allow the circuits to stabilize.

- Since the protective systems in the unit's software are rendered inoperative in test mode,be very careful to avoid mechanical and /or electrical shocks to the system when making adjustment.

- Test mode starting procedure
  Switch ACC,back-up ON while pressing the 4 and 6 keys together.
- Test mode cancellation
  Switch ACC,back-up OFF.
- Disc detection during loading and eject operations is performed by means of a photo transistor in this unit.Consequently,if the inside of the unit is exposed to a strong light source when the outer casing is removed for repairs or adjustment,the following malfunctions may occur.
  *During PLAY, even if the eject button is pressed,the disc will not be ejected and the unit will remain in the PLAY mode.
  *The unit will not load a disc.
  When the unit malfunctions this way,either reposition the light source,move the unit or cover the photo transistor.
- When loading and unloading discs during adjustment procedures,always wait for the disc to be properly clamped or ejected before pressing the another key. Otherwise, there is risk of the actuator being destroyed.
- Turn power off when pressing the TRACK+ or the TRACK- key for focus search in the test mode. (Or else lens may stick and the actuator may be damaged.)

Key	Function
REL/BAND	RegulatorON/OFF
TRACK+	FWD Kick
TRACK-	REV Kick
EJECT	EJECT
TRACK+ + TRACK-	Jump mode

Key	Function
F1(T.SCAN)	Tracking close
F2(MODE)	Tracking open
F3(PAUSE)	Focus close
SOURCE	CD ON/OFF

- SINGLE/10TRK/32TRK will continue to operate even after the key is released.Tracking closed the moment C-MOVE is released.

- JUMP MODE resets to SINGLE as soon as power is off.

● **Flow Chart**

```
   ( 4 )              ( 6 )
                                    ← ACC,Back-up ON

                                        During regulator off,press the
CD PLAYER SELECT  (SOURCE)  <Regulator OFF>   TRACK+ + TRACK- key and
                            TR:           the system will be put into the
                                          new test mode.

          (REL/BAND)  <Regulator ON>      (TRACK+
                      TR:00                 + TRACK-)
                      Display

(REL/BAND)    ( F3 )    ( F1 )     (TRACK+)      (TRACK-)
                     Tracking  servo
                     closed
                                    Carriage  shifted    Carriage  shifted
         In focus state            outwards  while       inwards  while
                          ( F3 )   this key is pressed    this key is pressed

              /Focus\  NO          Spindle  kicked  while  this  key  is  pressed
              \closed/
                       <Focus closed,
                YES     tracking open,      Display   TR:11
                        spindle "rough" servo>

(REL/BAND)    ( F1 )
                       <Tracking  closed>    Display    TR:01
                                             example

(REL/BAND) (TRACK+) (TRACK-)  (TRACK+      ( F2 )
                               + TRACK-)
                                    C.MOVE
          Single/10TRK/32TRK       → Single → 10TRK ┐ SELECT
                                   └ C.MOVE ← 32TRK ┘
(REL/BAND)          ( F2 )
```

• Measuring Equipment and Jigs

Adjustment	Measuring equipment&jigs
Grating Adjustment	Oscilloscope,clock driver,grating adjustment filter (bandpass filter)(GGF133),AC millivoltmeter SONY TYPE 4 (or TYPE 3) Extension Cable:GGF1132,GGF1135
Tangential Skew Check	Oscilloscope,screwdriver SONY TYPE 4 (or TYPE 3) Extension Cable:GGF1132,GGF1135
Grating Adjustment	Oscilloscope,clock driver,two low-pass filters SONY TYPE 4 (or TYPE 3) Extension Cable:GGF1132,GGF1135
FE Bias Adjustment	Oscilloscope SONY TYPE 4 (or TYPE 3) Extension Cable:GGF1132,GGF1135
RF Offset Adjustment	Oscilloscope SONY TYPE 4 (or TYPE 3) Extension Cable:GGF1132,GGF1135
TE Offset Adjustment-1	DC voltmeter Extension Cable:GGF1132,GGF1135
Tracking Balance Adjustment-1	Oscilloscope SONY TYPE 4 (or TYPE 3) Extension Cable:GGF1132,GGF1135
Focus Servo Loop Gain Adjustment	Oscillator,gain adjustment filter (GGF-065), dual meter milli-voltmeter SONY TYPE 4 (or TYPE 3) Extension Cable:GGF1132,GGF1135
Tracking Servo Loop Gain Adjustment	Oscillator,gain adjustment filter (GGF-065), dual meter milli-voltmeter SONY TYPE 4 (or TYPE 3) Extension Cable:GGF1132,GGF1135
TE Offset Adjustment-2	DC voltmeter Extension Cable:GGF1132,GGF1135
Tracking Balance Adjustment-2	Oscilloscope SONY TYPE 4 (or TYPE 3) Extension Cable:GGF1132,GGF1135

• Adjustment Point

VR351	TRACKING BALANCE
VR352	RF OFFSET
VR353	TE OFFSET
VR354	TRACKING SERVO LOOP GAIN
VR355	FOCUS ERROR BIAS
VR356	FOCUS SERVO LOOP GAIN

Fig. 17

Note :
CD mechanism module can be adjusted without removing control unit.

● **Test Point**

Fig. 18

10.1 GRATING ADJUSTMENT (ROUGH ADJUSTMENT)

- Purpose: The grating may need adjustment in a replaced pick-up unit.

- Maladjustment symptoms: No disc playback;track jumping.

• Measuring equipment / jigs	• Oscilloscope,clock driver,grating adjustment filter (bandpass filter)(GGF-133),AC millivoltmeter
• Measuring point	• TEY
• Test disc and setting	• SONY TYPE 4 (or TYPE 3) • Test mode
• Adjustment position	• Pick-up grating adjustment hole

Fig. 19

Adjustment Procedure

1. Switch regulator ON in test mode,and load a disc.

2. Use **TRACK+** or **TRACK-** key as required to bring pick-up at the adjusting hole on control unit (tune TNO 6). (TYPE 3:TNO 7)
   Mutch with TNO 6 (TYPE 3:TNO 7) when releweing the control unit.

3. Press the **F3** key to close focus.

4. While monitoring the TEY filter output by AC milli-voltmeter,turn the grating adjustment hole slowly. The AC voltage increases and decreases while turning the screw. Search for the minimum voltage level. (This corresponds to the position where the grating is on a track,and is referred to as the null point.)

5. Then while monitoring TEY by oscilloscope,turn the driver slowly clockwise from the null point (as seen from under the pick-up) until the first waveform peak amplitude is reached.

10.2 TANGENTIAL SKEW CHECK

- Purpose: To check whether tangential skew has been misaligned or not when replacing the pick-up unit.

- Maladjustment symptoms: No disc playback;track jumping.

• Measuring equipment / jigs	• Oscilloscope,screwdriver
• Measuring point	• RFO
• Test disc and setting	• SONY TYPE 4 (or TYPE 3) • Normal mode
• Adjustment position	• Pick-up tangential adjustment screw

CONTROL UNIT

Oscilloscope

0.1 µs/div.
0.5V/div.
AC mode

REFOUT

RFO

Fig. 20

Adjustment Procedure

1. Check that the pick up position does not differ from that at the same time of grating adjustment.(TYPE 4:TNO 6,TYPE 3:TNO 7)

2. Turn the tangential adjustment screw to obtain a good RF waveform eye pattern. Turn the adjustment screw both clockwise and counterclockwise to points where the eye pattern deteriorates,and take the midway point as the adjustment point. As a general guide,look for an overall clear waveform,and one of the diamond shapes in the eye pattern. The diamond shapes should appear in fine lines at the point of optimum adjustment. Take care not to knock the pick-up with the screwdriver at this stage. (This kind of accident can result in loss of focus.) (See Fig.21,22)

3. Apply "screw-lock" to the tangential adjustment screw.

4. After adjusting tangential skew,also adjust the grating.
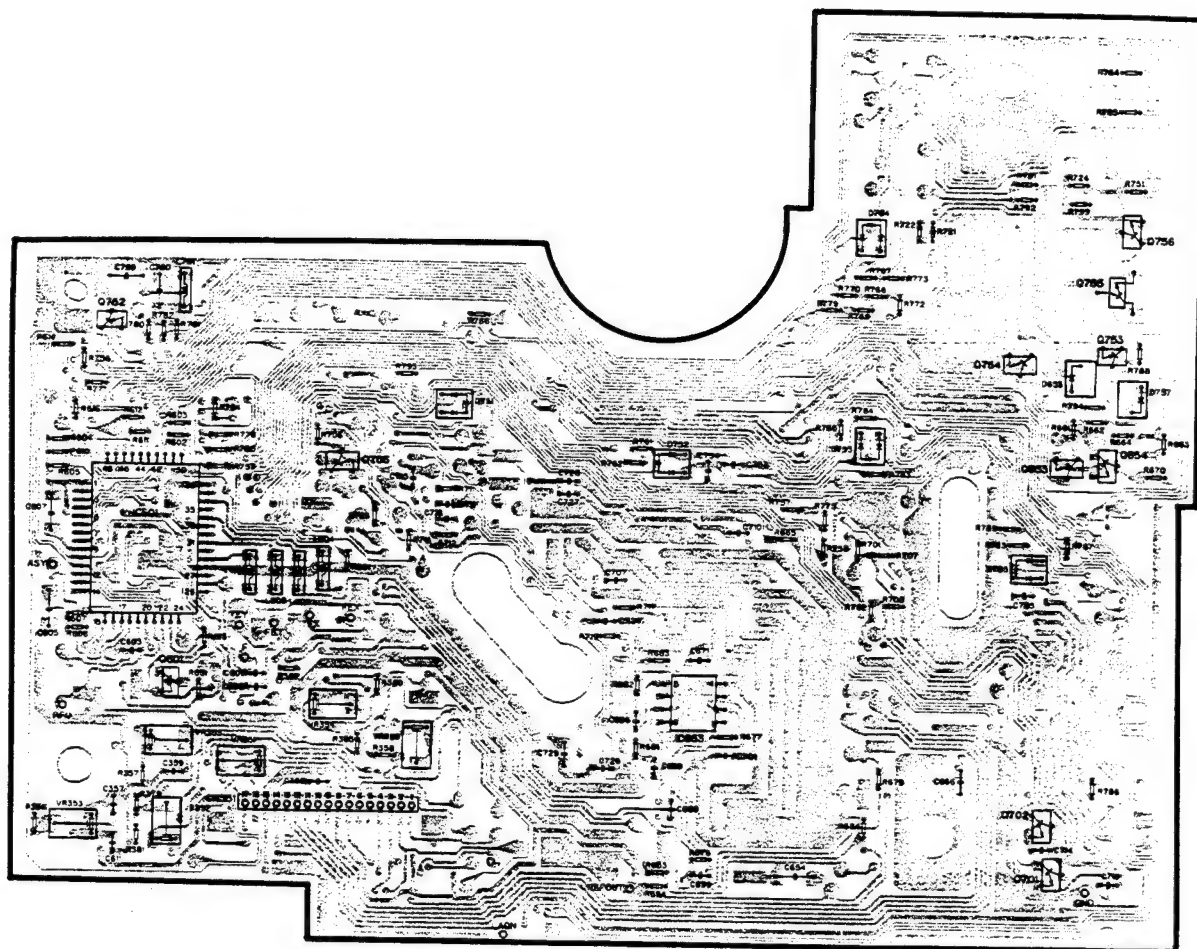
Fig. 21

AC mode
0.5V/div.
0.1 μs/div.

Fig. 22

10.3 GRATING ADJUSTMENT (FINE ADJUSTMENT)

- Purpose: The grating may need adjustment in a replaced pick-up unit.

- Maladjustment symptoms: No disc playback;track jumping.

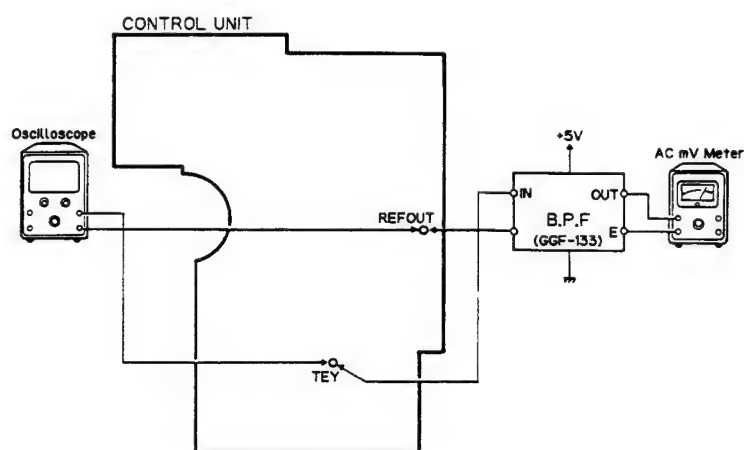|	
• Measuring equipment / jigs	• Oscilloscope,clock driver,two low-pass filters
• Measuring point	• TEY,E LPF output,F LPF output
• Test disc and setting	• SONY TYPE 4 (or TYPE 3) • Test mode
• Adjustment position	• Pick-up grating adjustment hole

Fig. 23

Adjustment Procedure

1. Switch regulator ON in test mode,and load a disc.

2. Use **TRACK+** or **TRACK-** key as required to bring pick-up at the adjusting hole on control unit (tune TNO 6). (TYPE 3:TNO 7)
   Mutch with TNO 6 (TYPE 3:TNO 7) when releweing the control unit.

3. Press the **F3** key to close focus.

4. With the E low-pass filter output connected to the X axis of the oscilloscope,and the F low-pass filter output connected to the Y axis,apply an input in AC mode and observe the Lissajous figurs.(Fig.24-29)

5. Using the driver,adjust the Lissajous figure to a single line (or as close as possible)

6. Switch regulator OFF and remove the filters.

B.P.F (GGF-133)

TEY waveform 5ms/div., 0.5V/div.

Null Point

Lissajous figure (AC input)
Horizontal axis E 20mV/div
Vertical axis F 20mV/div

Fig. 24

Fig. 25

"Rough" adjustment

Fig. 26

Fig. 27

Final adjustment

Fig. 28

Fig. 29

23

10.4 FE BIAS ADJUSTMENT

- Purpose: To adjust the focus servo bias to an optimum value.

- Maladjustment symptoms: Focus closing difficulty, poor playability.

• Measuring equipment / jigs	• Oscilloscope
• Measuring point	• RFO
• Test disc and setting	• SONY TYPE 4 (or TYPE 3) • Normal mode
• Adjustment position	• VR355(FEB)

Fig. 30

Adjustment Procedure

1. Play in normal mode.

2. Observe RFO in respect to REFOUT in the oscilloscope, and adjust VR355(FEB) to obtain maximum RF and optimum eye pattern. (See Fig.31,32)

OK

Fig. 31

AC Mode   Before adjustment   Fig. 32

10.5 RF OFFSET ADJUSTMENT

- Purpose: To adjust the RF amplifier offset to a suitable value.

- Maladjustment symptoms: Focus closure fails readily.

• Measuring equipment / jigs	• Oscilloscope
• Measuring point	• RFO
• Test disc and setting	• SONY TYPE 4 (or TYPE 3) • Normal mode
• Adjustment position	• VR352(RFO)

CONTROL UNIT

Oscilloscope

REFOUT

RFO

When using a multi-channel oscilloscope, do not connect the other negative probe to ground.

Fig. 33

Adjustment Procedure

1. Play tune TNO 12 in normal mode. (TYPE 3:TNO 14)

2. Use VR352 to adjust the RFO waveform so that REFOUT appaers at the center. (A-B must not exceed 100 mV.)

A

B

REFOUT

10.6 TE OFFSET ADJUSTMENT-1

- Purpose: To adjust the electrical offset of the tracking servo to zero.

- Maladjustment symptoms: Search times too long,carriage run-away.

• Measuring equipment / jigs	• DC voltmeter
• Measuring point	• TEY
• Test disc and setting	• No Disc • Test mode
• Adjustment position	• VR353(TEO)

CONTROL UNIT

GND

Oscilloscope

REFOUT

LAON

TEY

Fig. 34

Adjustment Procedure

1. Connect LAON to GND.

2. Switch regulator ON while in test mode.

3. Using VR353(TEO),adjust the TEY output DC voltage in reference to REFOUT to a value of 0±25mV.

4. Switch regulator OFF.

10.7 TRACKING BALANCE ADJUSTMENT-1

- Purpose: To adjust the tracking servo offset to zero.

- Maladjustment symptoms: Search times too long,poor playability,carriage run-away.

• Measuring equipment / jigs • Measuring point • Test disc and setting • Adjustment position	• Oscilloscope • TEY (Tracking error signal) • SONY TYPE 4 (or TYPE 3) • Test mode • VR351(T.BAL)

CONTROL UNIT

L.P.F
100k
390p

REFOUT

LAON

TEY

Oscilloscope

Fig. 35

Adjustment Procedure

1. Set the test disc (SONY TYPE 4). Switch regulator ON.

2. Using the **TRACK+** or **TRACK-** key,move the pick-up to about the center of the signal surface.

3. Press the **F3** key to close focus.

4. Using an oscilloscope,observe the TEY signal in respect to REFOUT.
   Then adjust VR351(T.BAL) to set the positive and negative amplitudes to the same levels.(See Fig.36-38)

5. Switch the power OFF.

+5% NG

Fig. 36

±0% OK

Fig. 37

-5% NG

Fig. 38

10ms/div.
0.5V/div.
DC Mode

10.8 FOCUS SERVO LOOP GAIN ADJUSTMENT

- Purpose: To adjust the focus servo loop gain to an optimum value.

- Maladjustment symptoms: Poor playability,reduced resistance to vibration,focus closure fails readily.

• Measuring equipment / jigs	• Oscillator,gain adjustment filter (GGF-065),dual meter milli-voltmeter
• Measuring point	• FEX,FEY
• Test disc and setting	• SONY TYPE 4 (or TYPE 3) • Normal mode
• Adjustment position	• VR356(FG)

Fig. 39

Adjustment Procedure

1. After checking that the power is OFF, connect the gain adjustment filter and measuring equipment as shown in the above diagram.

2. Play tune TNO 12 in normal mode. (TYPE 3:TNO 14)

3. Set the oscillator to 1kHz,and observe the FEX/FEY output in the oscilloscope. Adjust the oscillator output to obtain a FEX/FEY output of 100mVp-p.

4. Adjust VR356(FG) to obtain a milli-voltmeter difference of 0±0.5dB.

10.9 TRACKING SERVO LOOP GAIN ADJUSTMENT

- Purpose: To adjust the tracking servo loop gain to an optimum value.

- Maladjustment symptoms: Poor playability, reduced resistance to vibration.

• Measuring equipment / jigs	• Oscillator, gain adjustment filter (GGF-065), dual meter milli- voltmeter
• Measuring point	• TEX, TEY
• Test disc and setting	• SONY TYPE 4 (or TYPE 3) • Normal mode
• Adjustment position	• VR354(TG)

Fig. 40

Adjustment Procedure

1. After checking that the power is OFF, connect the gain adjustment filter and measuring equipment as shown in the above diagram.

2. Play tune TNO 12 in normal mode. (TYPE 3:TNO 14)

3. Set the oscillator to 1.4kHz, and observe the TEX/TEY output in the oscilloscope. Adjust the oscillator output to obtain a TEX/TEY output of 300mVp-p.

4. Adjust VR354(TG) to obtain a milli-voltmeter difference of 0±0.5dB.

10.10 TE OFFSET ADJUSTMENT-2

- Purpose: To adjust the electrical offset of the tracking servo to zero.

- Maladjustment symptoms: Search times too long,carriage run-away.

• Measuring equipment / jigs	• DC voltmeter
• Measuring point	• TEY
• Test disc and setting	• No Disc • Test mode
• Adjustment position	• VR353

Adjustment Procedure

Same as for TE offset adjustment-1,but with the DC voltage of the TEY output adjusted to 0±50mV.
The purpose of this additional adjustment is to correct any deviations generated when carrying out the tracking balance and tracking servo loop gain adjustments after completing TE offset adjustment-1.

10.11 TRACKING BALANCE ADJUSTMENT-2

- Purpose: To adjust the tracking servo offset to zero.

- Maladjustment symptoms: Search times too long,poor playability,carriage run-away.

• Measuring equipment / jigs	• Oscilloscope
• Measuring point	• TEY
• Test disc and setting	• SONY TYPE 4 (or TYPE 3) • Test mode
• Adjustment position	• VR351

Adjustment Procedure

Steps 1 thru 5 same as tracking balance adjustment-1.

6. Check that the level difference between the positive and negative amplitudes of the TEY signal is within 5% (See Fig.36-38). If greater than 5%,adjust with VR351.

7. If further adjustment was necessary in step 6,repeat TE offset adjustment-2.

10.12 TUNER ADJUSTMENT

• Connection Diagram

NOTICE:
SELECT C1 so that total capacity of 80pF is attained from the direction of the receiver jack.
Z: Output impedance of SSG.

Fig. 41

FM ADJUSTMENT ※ Stereo MOD.: 1kHz, L+R=90%, Pilot=10%

	No.	FM SSG (400Hz, 100%)		Displayed Frequency (MHz)	Adjusting Point	Adjustment Method (Switch Position)
		Frequency (MHz)	Level (dBμV)			
IF	1	98.1025	60	98.1	T51	Center Meter:0
	2	98.1	60	98.1	T52	Distortion Meter:Minimum
	3	Repeat No.1-2 alternately so that the center meter indicates the 0 output and distortion meter indicates minimum output.				
Front End	1			108.0	L5	DC V Meter(1):6.2±0.2V
	2			87.5		Verify that DC V Meter(1) is more than 2.1±0.6V
	3	98.1	8	98.1	T1	Oscilloscope:Optimum Symmetry
	4	98.1※	60	98.1	T1	Distortion Meter:Minimum Rotate T1 less than ±90
Soft Mute	1	98.1	60	98.1		mV Meter(1):A dB
	2	98.1	9	98.1	VR102	mV Meter(1):A-3dB
ARC	1	98.1※	34	98.1	VR101	mV Meter(1):Separation 5dB
SD	1	98.1	15	98.1	VR51	DC V Meter(2):Approx. 5V
	2	98.1	14	98.1		Verify that DC V Meter(2) is approx. 0V.
	3	98.1	55	98.1	VR1	DC V Meter(2):Approx. 5V
		Connect collector of Q2 to GND. Connect DC regulated power supply to pin 3 of FM front end through resistor(330Ω). Add 4.3v from DC regulated power supply.				
	4	98.1	54	98.1		Verify that DC V Meter(2) is approx. 0V.

MW/LW ADJUSTMENT

	No.	AM SSG(400Hz, 30%)		Displayed Frequency (kHz)	Adjusting Point	Adjustment Method (Switch Position)
		Frequency (kHz)	Level (dBμV)			
Tuning Volt	1	(MW MODE)		1,602	———	Verify that DC V Meter (1) is less than 6.5V.
	2	(LW MODE)		153	———	Verify that DC V Meter (1) is more than 2.0V.
IF	1	999	20—25	999	T204, 205, 206	mV Meter(1):Maximum

CLOCK ADJUSTMENT

No.	Adjusting Point	Adjustment Method
1		BACK-UP→ON, ACC→ON
2		S1:ON
3	TC751	Frequency Counter:1,048,576Hz±2Hz

• **ICs**

LC7218HS

IC201 : PA4017

RC4558S

PA4012B

UPC1347GS

```
VCC   ─┤ 1        36 ├─ FE2O
BP    ─┤ 2        35 ├─ FE2-
BPO   ─┤ 3
WC+   ─┤ 4        34 ├─ FE1O
WC-   ─┤ 5        33 ├─ FE1+
GND   ─┤ 6        32 ├─ FE2+
QDH   ─┤ 7        31 ├─ VREF2
QDO   ─┤ 8        30 ├─ TE2O
A     ─┤ 9        29 ├─ TE2-
C     ─┤ 10       28 ├─ TE1O
B     ─┤ 11       27 ├─ APCO
D     ─┤ 12       26 ├─ TE2+
E     ─┤ 13       25 ├─ APC-
F     ─┤ 14       24 ├─ RFO
PIN   ─┤ 15       23 ├─ NC
LA    ─┤ 16       22 ├─ RF-
LAON  ─┤ 17       21 ├─ RFS
VREF1 ─┤ 18       20 ├─ RF+
                  19 ├─ GND2
```

● Pin Functions (UPC1347GS)

Pin No	Pin Name	I/O	Function and Operation
1	VCC		
2	BP-	Input	Vibration detect amplifier 1 inverter input
3	BPO	Output	Vibration detect amplifier 1 output
4	WC+	Input	Window comparator non-inverting input
5	WC-	Input	Window comparator inverter input
6	GND		GND
7	QDH	Input	Vibration detect amplifier 3 non-inverting input
8	QDO	Output	Vibration detect amplifier 3 output
9	A	Input	A signal input
10	C	Input	C signal input
11	B	Input	B signal input
12	D	Input	D signal input
13	E	Input	E signal input
14	F	Input	F signal input
15	PIN	Input	APC circuit PD amplifier input
16	LA	Output	APC circuit LD amplifier output
17	LAON		Laser diode ON/OFF switching
18	VREF1		Reference voltage
19	GND2		GND
20	RF+	Input	RF amplifier non-inverting input
21	RFS	Output	RF summing virtual output
22	RF-	Input	RF amplifier inverter input
23	NC		
24	RFO	Output	RF amplifier output
25	APC-	Input	APC circuit PD amplifier inverter input
26	TE2+	Input	Tracking error amplifier 2 non-inverting input
27	APCO	Output	APC circuit PD amplifier output
28	TE1O	Output	Tracking error amplifier 1 output
29	TE2-	Input	Tracking error amplifier 2 inverter input
30	TE2O	Output	Tracking error amplifier 2 output
31	VREF2		Reference voltage
32	FE2+	Input	Focus error amplifier 2 non-inverting input
33	FE1+	Input	Focus error amplifier 1 non-inverting input
34	FE1O	Output	Focus error amplifier 1 output
35	FE2-	Input	Focus error amplifier 2 inverter input
36	FE2O	Output	Focus error amplifier 2 output

LC7582E

S16 S15 S14 S13 S12 S11 S10 S9 S8 S7 S6 S5 S4 S3 S2 S1

16 15 14 13 12 11 10 9 8 7 6 5 4 3 2 1

S17 17   64 COM 1
S18 18   63 COM 2
S19 19   62 DATA
S20 20   SHIFT REGISTOR (56bits)   61 CLK
S21 21   60 CE
S22 22   59 VSS
S23 23   COMMON DRIVER   58 VLCD
(OPEN) 24   57 INH
S24 25   56 VDD
S25 26   CLOCK GENERATOR   55 OSC
S26 27   54 ADD 5
S27 28   53 ADD 4
S28 29   52 ADD 3
S29 30   51 ADD 2
S30 31   ADC   ADC   50 ADD 1
S31 32   49 DSP OUT

LATCH1 & DRIVER (1~56bits)
(LATCH2 & DRIVER (57~112bits)

33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48

S32 S33 S34 S35 S36 S37 S38 S39 S40 S41 S42 S43 DSP2 AD2 DSP1 AD1

HA13139

MUTE

MUTE

STAND-BY

SURGE, TSD, ASO PROTECTOR

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16

R IN | NC | L IN | IN GND | MUTE1 | MUTE2 | RIPPLE | VCC 1 | STBY | R OUT - | R OUT + | R OUT GND | L OUT + | L OUT - | L OUT GND | VCC 2

• Pin Functions (UPD6374GH)

Pin No	Pin Name	I/O	Function and Operation
1	VDD		Positive power supply terminal for logic circuit
2	OUTSEL	Input	Sets PWM output mode for the motor system
3	$\overline{SCK}$	Input	Clock input terminal for serial date input and output
4	SI	Input	Serial date input
5	SO	Output	serial date and status signal output
6	$\overline{STB}$	Input	Signal latching serial data inside LSI
7	A0	Input	Used in combination with $\overline{STB}$ A0 = "L" : Set in address register when $\overline{STB}$ is active A0 = "H" : Parameter setting when $\overline{STB}$ is active
8	$\overline{RST}$	Input	System reset
9	DGND		Logic circuit GND
10	LOCK	Input	
11	MDR	Input	Input terminals for detection of spindle servo error signals
12	MDF	Input	
13	WFCK	Input	
14	RFCK	Input	
15	AVDD		Positive power supply terminal for analog circuit
16	EFM	Output	EFM signal output terminal
17	ASI	Input	Level comparing input terminal for RF signal comparison
18	RFI	Input	Analog input terminal for EFM comparator
19	REFOUT	Output	A/D converter midpoint output terminal inside LSI
20	AGND		Analog circuit GND
21	RF	Output	RF signal input terminal
22	FE	Input	Focus error input terminal
23	TE	Input	Tracking error input terminal
24	VR	Input	Input signal is quantified as follows : Fs=88.2KHz. Resolution : 6 bits The output takes place directly at microcomputer interface. that is. not via the filter block within LSI.
25	AVDD		Positive power supply terminal for analog circuit
26	TECO	Input	Tracking comparator input terminal
27	TECI	Input	
28	DVDD		Positive power supply terminal for logic circuit
29	FF	Output	PWM positive output terminal for the focus loop filter
30	FR	Output	PWM negative output terminal for the focus loop filter
31	TF	Output	PWM positive output terminal for the tracking loop filter
32	TR	Output	PWM negative output terminal for the tracking loop filter
33	DGND		Logic circuit GND terminal
34	SF	Output	PWM positive output terminal for the thread loop filter
35	SR	Output	PWM negative output terminal for the thread loop filter
36	MF	Output	PWM positive output terminal for the spindle loop filter
37	MR	Output	PWM negative output terminal for the spindle loop filter
38	DVDD		Positive power supply terminal for logic circuit
39	T7	Input	Sets tracking PWM output mode
40	T6	Input	Sets focus PWM output mode
41	T5	Input	Selects motor modulation mode
42	T4	Input	Selects between focus and tracking modulation modes
43	MIRR	Output	MIRR detection signal output terminal
44	RFOK	Output	RFOK detection signal output terminal
45	HOLD	Input	Hold control signal input terminal
46	TBC		Tracking bank switching terminal
47	CKIN	Input	System clock input terminal
48	$\overline{TEST}$	Input	Test terminal

UPD6374GH

MB3854PF

PA3026

DEH-790SDK

• Pin Functions (UPD6375GC)

Pin No	Pin Name	I/O	Function and Operation
1	NC		
2	WDCK	Output	Output terminal for signal having double the frequency of LRCK
3	C4LR	Output	Output terminal for signal having four the frequency of LRCK
4	RFCK	Output	Oscillation clock divider signal, output terminal for signal giving one-frame synchronization
5	EFMI	Input	EFM signal input terminal
6	TEST		TEST
7	VSS		GND
8	C1D1	Output	Output terminal indicating C1 error correction status
9	C1D2	Output	
10	C2D1	Output	Output terminal indicating C2 error correction status
11	C2D2	Output	
12, 13	NC		
14	STBY	Input	Standby input terminal. STBY=H stops clock oscillation
15	NC		
16	PLK1	Output	VCO output terminal for use in analog PLL selection
17	VDD		VDD
18	PLK8	Input	VCO clock input terminal for use in analog PLL selection
19	PLCK	Output	Bit clock monitor terminal
20	VSS		GND
21	POUT	Output	Output terminal for phase comparison between EFM signal and bit clock
22	WFCK	Output	Signal issuring one-frame period (approximately 7.35kHz) by bit clock dividing signal
23	VDD		5 V
24	MD	Output	Signal indicating spindle motor CLV servo control output status
25	MDF	Output	Spindle motor CLV servo control positive direction output terminal
26	MDR	Output	Spindle motor CLV servo control negative direction output terminal
27	LOCK	Output	Becomes "H" when the synchronization signal and frame counter output coincide at EFM demodulator
28	RST	Input	Reset signal input terminal
29	A0	Input	Control signal distinguishing data from microcomputer
30	STB	Input	Signal latching within this LSI the serial data fetched from SI terminal
31	SO		Serial data input terminal
32	SI	Input	Input terminal fro data from microcomputer
33	VSS		GND
34	SCK	Input	Clock input terminal for serial data input
35	TX	Output	Digital audio interface data output terminal
36	MUTE/EMPH	Output	Output terminal for mute command decoding signal or sub-Q command pre-emphasis data
37	SFSY	Output	Signal indicating subcode one-frame synchronization
38	SBSY	Output	Signal indicating head of subcode block
39	SBCK	Input	Subcode data read clock input terminal
40	SBSO	Output	Subcode data output terminal
41	VDD		5 V
42	XTAL	Output	Oscillation continuation terminal
43	XTAL	Input	Oscillation continuation terminal

Pin No	Pin Name	I/O	Function and Operation
44	VSS		G N D
45	C16M	Output	Oscillation clock output terminal
46	VDD		5 V
47	C4M	Output	1/4 cycle output terminal for oscillation clock signals
48	FLAG	Output	Flag signal indicating that the current audio data output consists of incorrectable data
49	SCKO	Output	Clock output terminal for audio serial data
50	DOUT	Output	Serial audio data output terminal
51	LRCK	Output	Signal distinguishing between left and right channel DOUT terminal output
52	NC		

UPD6375GC

M5218FP
RC4558M

TC74HC74AF

M51957AL

TC9237F-PK

TA2009F

PA2019A

```
              ┌──────────────────┐
           ──┤        VDD  25 ├──
     24  CTRL ├                  ┤
           ──┤   B.SENS  23 ├──
     22  A.SENS├                  ┤
           ──┤        C  21 ├──
     20  B   ├                  ┤
           ──┤        A  19 ├──
     18  MUTE ├                  ┤
           ──┤    VCC+5  17 ├──
     16  TUNB ├                  ┤
           ──┤      FMB  15 ├──
     14  AMB ├                  ┤
           ──┤      GND  13 ├──
     12  GND ├                  ┤
           ──┤    TAPEB  11 ├──
     10  SYSB├                  ┤
           ──┤    STBYB   9 ├──
      8  BU  ├                  ┤
           ──┤       BU   7 ├──
      6  MUTE.OUT├              ┤
           ──┤       T3   5 ├──
      4  T2  ├                  ┤
           ──┤       T1   3 ├──
      2  ACC ├                  ┤
           ──┤      GND   1 ├──
              └──────────────────┘
```

• Pin Function (PA2019A)

Pin No.	Pin Name	I/O	Function and Operation
1	GND (REF)		Reference ground
2	ACC		ACC
3	T 1		Connects external condenser for VDD back-up
4, 5	NC		
6	MUTEOUT	Output	Mute circuit control output
7, 8	BU		Back-up
9	STBY B	Output	Power amplifier control signal output
10	SYSB	Output	Stabilized power output for common system circuits such as for tone quality, volume, and balance
11	TAPEB	Output	Stabilized power output for cassette deck circuits such as for the equalizer amplifier
12, 13	GND (A)		Analog ground
14	AMB	Output	Stabilized power output for AM tuner circuit
15	FMB	Output	Stabilized power output for FM tuner circuit
16	TUNB	Output	Stabilized power output for AM and FM tuner external circuit
17	VCC 5V	Output	Stabilized power output for microcomputer interface and other circuit
18	MUTE	Input	Mute signal input
19	A	Input	Output selection input controlling output by the 3-bit ABC signal
20	B	Input	Output selection input controlling output by the 3-bit ABC signal
21	C	Input	Output selection input controlling output by the 3-bit ABC signal
22	ASENS	Output	ACC line voltage detection output (H for output detection)
23	BSENS	Output	BU line voltage detection output (H for output detection)
24	CTRL	Input	IC status control input for control from outside
25	VDD 5V		Stabilized power source for microcomputer, has backup function

· Pin Functions (PD5156B)

Pin No.	Pin Name	I/O	I/O Format	Function and Operation
1	NC			Not used
2	TEMP			Temperature detector
3	VDSENSE2			Short sense input
4	DCD	Output	NM	Command/data appointment output
5	DCS	Output	NM	Chip select output
6	DRDY	Input		Ready input
7	DRST	Output	NM	Reset output
8	A0	Output	NM	LSI data control signal
9	XSCK	Output	NM	LSI clock output
10	XSO	Output	NM	LSI data output
11	XSI	Input	NM	LSI data input
12	STB	Output	C	LSI strobe output
13	RST	Output	C	Reset output pin
14	ENDOUT	Output	C	Digital output enable signal
15	PEE	Output	C	Beep tone output
16	ASENS	Input		ACC power sense input pin
17	BSENS	Input		Back up power sense input pin
18	BRST	Input		Bus communication reset input pin
19	BSRQ	Output	C	Bus communication service request output pin
20	BRXEN	Input/Output	C	Bus communication reception enable input pin
21	BSCK	Input/Output	C	Bus serial clock input/output
22	BSO	Output	C	Serial data output pin
23	BSI	Input		Bus serial data input
24	EJSW	Input		Eject signal input
25	REMIN	Input		Remote control pulse input
26	CNVSS			Gnd
27	RESET	Input		Reset input
28	FECNT	Output	C	
29	NC			Not used
30	XIN	Input		Crystal oscillating element connection pin
31	XOUT	Output	C	Crystal oscillating element connection pin
32	VSS			GND
33 – 40	NC			Not used
41	POWER	Output	C	CD +5V control
42	CONT	Output	C	Servo driver power supply control
43, 44	NC			Not used
45	VDSENS	Input		Over voltage sense input
46	VDCONT	Output	C	VD control output
47	DSET	Output	C	Disc set indicator control output
48	BLGT	Output	C	LCD back light control output
49	VMC	Output	C	Loading motor driver power supply
50	EJ	Output	C	Loading motor EJECT control
51	LOAD	Output	C	Loading motor LOAD control
52	NC			Not used
53	DINC	Input		Disc insert sense input
54	EJTD	Input		Disc eject position sense input "H":FM. "L":AM
55	CLAMP	Input		Disc clamp sense input
56	NC			Not used

46

Pin No.	Pin Name	I/O	I/O Format	Function and Operation
57	HOLD	Output	C	Hold control output
58	TBC	Output	C	Tracking bank switching output
59	NC			Not used
60	MIRR	Input		Mirror detector input
61	LOCK	Input		Spindle lock detector input
62	FOK	Input		FOK signal input
63	HOME	Input		Home position detector input
64-68	NC			Not used
69	OPTSW	Input		Digital output ON/OFF input
70	CDMUTE	Output	C	CD mute output
71	ADENA	Output	C	A/D reference voltage output
72	TESTIN	Input		Test program mode input
73	VCC			Back up 5V
74	VREF	Input		A/D reference voltage input
75	AVSS			A/D GND
76	CSEL			Compression select
77,78	NC			Not used
79	KD0			Analog key input 0
80	KD1			Analog key input 1

I/O Format	Meaning
C	CMOS output
NM	Middle resistivity N channel open drain

IC's marked by * are MOS type.
Be careful in handling them because they are very liable to be damaged by electrostatic induction.

* PD5156B

• **Pin Functions (PMJ001A)**

Pin No	Pin Name	I/O	Function and Operation
1	AGND		Analog GND
2	NC		Non connect
3	COMP1		Reference voltage circuit. phase compensation terminal 1
4	COMP2		Reference voltage circuit. phase compensation terminal 2
5	ZCIN_L	Input	Lch:Zero cross detection circuit input
6	LOUD_L		Lch:Loudness setting terminal
7	VRIN_L	Input	Lch:Input. Hot side of volume
8	BASSCNT_L		Lch:Low frequency control terminal
9	BASSL_L		Lch:Pseudo inductor terminal for low frequencies
10	BASSDIF_L		Lch:Pseudo inductor differential input terminal for low frequencies ··
11	MIDCNT_L		Lch:Medium frequency control terminal
12	MIDL_L		Lch:Pseudo inductor terminal for medium frequencies
13	MIDDIF_L		Lch:Pseudo inductor differential input terminal for medium frequencies
14	TREBCNT_L		Lch:High frequency control terminal
15	TREBL_L		Lch:Pseudo inductor terminal for high frequencies
16	TREBDIF_L		Lch:Pseudo inductor differential input terminal for high frequencies
17	TONEOUT_L	Output	Lch:Buffer output terminal for the tone control circuit
18	FADERIN_L	Input	Lch:Fader circuit input terminal
19	FRNTOUT_L	Output	Lch:Front buffer output circuit
20	REAROUT_L	Output	Lch:Rear buffer output circuit
21	DGND		Digital GND terminal
22	DATA	Input	Serial data input terminal
23	CLK	Input	Clock input terminal
24	AGND		Analog GND
25	STB	Input	Latch strobe input terminal
26	VTIN	Input	Applies half of digital control power source controlling this IC
27	CT		Time constant terminal for forced switching time setting till zero cross detection
28	DVCC	Input	Digital power source terminal
29	REAROUT_R	Output	Rch:Rear buffer output·circuit
30	FRNTOUT_R	Output	Lch:Front buffer output circuit
31	FADERIN_R	Input	Rch:Fader circuit input terminal
32	TONEOUT_R	Output	Rch:Buffer output terminal for the tone control circuit
33	TREBDIF_R		Rch:Pseudo inductor differential input terminal for high frequencies
34	TREBL_R		Rch:Pseudo inductor terminal for high frequencies
35	TREBCNT_R		Rch:High frequency control terminal
36	MIDDIF_R		Rch:Pseudo inductor differential input terminal for low frequencies
37	MIDL_R		Rch:Pseudo inductor terminal for medium frequencies
38	MIDCNT_R		Rch:Medium frequency control terminal
39	BASSDIF_R	.	Rch:Pseudo inductor differential input terminal for low frequencies
40	BASSL_R		Rch:Pseudo inductor terminal for low frequencies
41	BASSCNT_R		Rch:Low frequency control terminal
42	VRIN_R	Input	Rch:Input. Hot side of volume
43	LOUD_R		Rch:Loudness setting terminal
44	ZCIN_R	Input	Rch:Zero cross detection circuit input

Pin No	Pin Name	I/O	Function and Operation
45	VREFIN	Input	Reference voltage input terminal
46	AVCC	Output	Internal stabilized power source terminal
47	NC		
48	VCC		Power terminal

PMJ001A

Pin	Name		Pin	Name
1	AGND		48	VCC
2	NC		47	NC
3	COMP1		46	AVCC
4	COMP2		45	VREFIN
5	ZCIN_L		44	ZCIN_R
6	LOUD_L		43	LOUD_R
7	VRIN_L		42	VRIN_R
8	BASSCNT_L		41	BASSCNT_R
9	BASSL_L		40	BASSL_R
10	BASSDIF_L		39	BASSDIF_R
11	MIDCNT_L		38	MIDCNT_R
12	MIDL_L		37	MIDL_R
13	MIDDIF_L		36	MIDDIF_R
14	TREBCNT_L		35	TREBCNT_R
15	TREBL_L		34	TREBL_R
16	TREBDIF_L		33	TREBDIF_R
17	TONEOUT_L		32	TONEOUT_R
18	FADERIN_L		31	FADERIN_R
19	FRNTOUT_L		30	FRNTOUT_R
20	REAROUT_L		29	REAROUT_R
21	DGND		28	DVCC
22	DATA		27	CT
23	CLK		26	VTIN
24	AGND		25	STB

RS-20C

• Pin Functions (PD4389C)

Pin No.	Pin Name	I/O	Output Format	Function and Operation
1	NC	Input		GND
2	AVREF	Input		A/D converter reference voltage input
3	VDD			VDD
4	VPP			PROM write power supply
5	ADENA	Output	C	AVREF enable output
6	MUTE	Output	C	System mute output
7	PCK	Output	C	Clock output for PLL control IC
8	PDT	Output	C	Data output for PLL control IC
9	PCE	Output	C	Chip enable for PLL control IC
10	VDT	Output	C	Data output for electronic volume IC
11	VCK	Output	C	Clock output for electronic volume IC
12	PBLGT			Not used
13	SWDVDD	Output	C	Power supply control for display unit ICs
14	VST	Output	C	Strobe output for electronic volume IC
15	LCE	Output	C	Chip enable for LCD driver IC
16	NC			
17	DSENS			Not used
18	LDT	Output	C	Data output for LCD driver
19	LCK	Output	C	Clock output for LCD driver
20	PEE	Output	C	Beep tone output
21	NC			
22	SK	Input		SK signal input
23	DK	Input		DK signal input
24	PDI	Input		Data input from PLL control IC
25	MMUTE	Output	C	Multi-CD mute output
26, 27	NC			
28	STBYPW	Output	C	Power supply IC stand-by output
29	ILM			Not used
30	NC			
31	TMUTE	Output	NM	Tuner mute output
32	NC			
33	GND			GND
34	NC			
35	TELM	Input		Telephone mute input
36	VDIN	Input		VD sense input
37	NC			
38~40	PWA~PWC	Output	C	Power supply IC control output
41	BRXEN	Input/ Output	C	Bus reception enable input/output
42	G/A			Not used
43	PCL	Output	C	Clock adjustment test point
44	NC			
45	BRST	Output	C	Bus reset output
46	AMIF	Input		AM IF input pin
47	ASENS	Input		ACC power supply sensor input
48	BSENS	Input		BACK UP power supply sensor input
49	REMIN	Input		Remote control pulse input
50	BSI	Input		Bus serial data input
51	BSO	Output	C	Bus serial data output

Pin No.	Pin Name	I/O	Output Format	Function and Operation
52	BSCK	Input/ Output	C	Bus serial clock input/output
53	BSRQ	Input		Polling request input
54, 57	GND			
55, 56	NC			
58	X1			Crystal oscillating element connection pin
59	X2			Crystal oscillating element connection pin
60	RESET	Input		Reset input
61	NC			
62	TEST	Input		TEST mode input pin
63, 64	NC			
65	AUNBER	Output	NM	Dual illumination amber(red) output
66	GREEN	Output	NM	Dual illumination green output
67, 68	NC			
69	SIMK3	Input		Model select input 3
70	SIMK0	Input		Model select input 0
71	SIMK1	Input		Model select input 1
72	SIMK2	Input		Model select input 2
73	GND			Gnd
74	TENBL			Not used
75	NC			
76	SDLEV	Input		Signal level input
77~80	KD4~KD1	Input		Key return input

I/O Format	Meaning
C	CMOS output
NM	Middle resistivity N channel open drain

IC's marked by * are MOS type.
Be careful in handling them because they are very liable to be damaged by electrostatic induction.

*PD4389C

KHA172

• **FM FRONT END (CWB1035)**

Fig. 42

• **LCD (CAW1143)**

SEGMENT

Fig. 43

COMMON

Fig. 44

4

1 2 3 4 5 6 7

TUNER AMP UN

Q506 Q851
Q969 Q852 Q853 IC5
IC, Q Q968 Q854 Q970 Q5

ADJ

11. CIRCUIT DIAGRAM AND P.C. BOARDS PATTERN

11.1 TUNER AMP UNIT AND DISPLAY UNIT (DEH-790SDK/WG)

A

ACC

BACK UP

GND

8 REMOTE

Q508
Q519
C517
R537
IC501
Q506

D853
D854
C852 C851
R852
Q852
IC85
Q853
C854 Q854
R860 R859 R890
R889

B

DISPLAY UNIT

C

IC IC901 IC903

EJECT
S909
L902
IL908
42 40 35 30 25 20 15 10 5 1
L904
C901
S908
BAND
S916
VOL UP
L909
R925 R840
30 25 14
35
IC901
LCD
D902
D901 D904
S902
TRACK UP
D905
R907 R901
S901
TRACK
DOWN
L905
S922
VOL
DOWN
R991
C957
Q968 Q970
R930
C906
SDK
S912
47 52 56 60
R911
R910
L901 S902
R904
L906 R905
R927
R953
S904
SHIFT
S93
IC903
Q969
CN752
R954 R953
SOURCE
S919
L912
C912
C907 49
64
CN901
14-13-12-11-10-9-8-7-6-5-4-3-2-1
F3 S906
R929
F2 S920
F1
S903
R934 R939
R925
L907
S918
L911
S917 2
S911 3
R936
S910 4
S914 R937 L910
S913 6
R938
5

D

55 56 57

1 2 3 4 5 6 7

5

TUNER AMP UNIT

Q506 Q851 Q507
Q969 Q852 Q853 IC501 Q505 Q502
IC. Q Q968 Q854 Q970 Q508 IC851 Q509 Q751 Q503 IC751 Q504 IC502 IC752 IC451 Q501 Q753 Q960 Q858 Q958

Q857 Q860
Q953 Q856 Q952
Q961 Q855 Q959 Q964
Q963 Q965
Q755 Q754 Q956 IC951 IC551

ADJ

TC751

Fig. 45

DISPLAY UNIT

FM/AM TUNER UNIT

IC901   IC903

EJECT S909
S908 BAND
S916 VOL UP
TRACK UP
TRACK DOWN
SHIFT
VOL DOWN
SOURCE S919
IC901
LCD
CN901
IC903

Q852
Q968

ADJ

Q506
Q969 Q852
IC. Q Q968

TUNER AMP UNIT

Q857 Q860
Q953 Q856 Q952
Q506 Q851 Q961 Q855 Q959 Q964
Q969 Q852 Q507 Q505 Q502 IC752 Q963 Q965
IC. Q Q968 Q970 IC501 Q751 Q503 IC751 Q504 IC451 Q753 Q960 Q858 Q958 Q755 Q754 Q956 IC951 IC551
ADJ Q508 IC851 Q509 TC751

CN951

CN851

IC451

IC751

IC551

IB551

IC951

IB752

IB753

CN752

IC752

CN751

TO CONTROL UNIT

Fig. 48

11.3   TUNER AMP UNIT AND DISPLAY UNIT (DEH-690SDK/WG)

Q506 Q851
Q969 Q852 Q853
IC. Q Q968 Q854 Q970

ADJ

DISPLAY UNIT

IC   IC901

TUNER AMP UNIT

Q506 Q851 Q507
Q969 Q852 Q853 IC501 Q505 Q502 IC752 Q953 Q856 Q952 Q964 Q965
IC. Q Q968 Q854 Q970 Q508 IC851 Q509 Q751 Q503 IC751 Q504 IC502 IC451 Q501 Q753 Q961 Q855 Q959 Q963 Q755 Q754 Q956 IC951 IC551
Q860 Q960 Q858

ADJ TC751

Fig. 49

TO CONTROL UNIT

Q50
Q969 Q852
IC. Q Q968

ADJ

A

B

DISPLAY UNIT

C

IC IC901

EJECT
S909

S916
VOL UP

L902

S908
BAND

IL904

L908

IL909

R925 R940

S901

IL905

S922

S902
TRACK UP

VOL
DOWN

C906

R930 R918

LCD

IC901

R935

TRACK
DOWN

R904

R927

S304
SHIFT
R931

R933

C912

R91

L906

D901 D904

R902

R905

CN901

R910

SOURCE
S919

L912

R914 F3 S906

R929

F2

F1
S903

R934 R939

L907

S926

S918

S917 2

S911 3

R936

S910 4

R937

S914 5

IL910

S913 6

R938

5V

14-13-12-11-10-9-8 —7-6-5-4-3-2-1

D854
C852
R852
Q852
R854
R892
C854
R882
R860

D

TUNER AMP UNIT

Fig. 52

TO CONTROL UNIT

ADJ

TC751

CONTROL UNIT (CWX1455)(DEH-790SDK/WG, DEH-690SDK/WG)

A

TEST POINT

ADJ | IC. Q

IC752

Q756

B

Q755

Q752
Q753
Q754
IC703
IC701
IC751

Q652
Q705
Q654

Q704
IC601
Q703
IC702

C

IC653
Q601
Q351

IC651
IC602

IC351
Q702
Q651

Q701

D

VR354
VR356
VR355
VR351

VR352
VR353

To
TUNER AMP UNIT

Fig. 53

14

• Wave Forms

① RFO   0.5V/div.   0.2µs/div.
Normal mode: play

① CH1: RFO   1V/div.
② CH2: MIRR   5V/div.   0.5ms/div.
Test mode: Tracking open

① CH1: RFO   1V/div.
② CH2: MIRR   5V/div.   0.5ms/div.
Normal mode: The defect part passes 800µm.

⑧ CH1: TEY   0.5V/div.
⑨ CH2: TIN   0.5V/div.   20ms/div.
Normal mode: Play

⑧ CH1: TEY   1V/div.
㉓ CH2: CIN   1V/div.   5ms/div.
Normal mode: Search

⑩ SIN   0.5V/div.   50ms/div.
Normal mode: Play (12cm disc)

⑱ LRCK   2V/
Play

③ CH1: FIN   1V/div.
④ CH2: FO   2V/div.   0.5s/div.
Test mode: Connect the FEX to REFOUT.
Focus search is performed.

⑤ CH1: FOK   2V/div.
③ CH2: FIN   1V/div.   0.5s/div.
Normal mode: Focus close

⑥ CH1: FEY   1V/div.
⑦ CH2: XSO   2V/div.   2ms/div.
Normal mode: Focus close
(The lens moves DOWN → UP)

⑩ SIN   0.5V/div.   10ms/div.
Search (12cm disc)

⑪ EFM   2V/div.   5µs/div.
Play

⑫ CH1: MDF   5V/div.
⑬ CH2: MDR   5V/div.   2ms/div.
Play

⑧ CH1: TEY   0.5V/div.
⑨ CH2: TIN   0.5V/div.   0.5ms/div.
Normal mode: Brake wave from when track search is performed.

⑧ CH1: TEY   1V/div.
⑨ CH2: TIN   0.5V/div.   1ms/div.
Normal mode: single jump

⑧ CH1: TEY   0.5V/div.
⑨ CH2: TIN   0.5V/div.   5ms/div.
Normal mode: Track search
(32 track jump)

⑫ CH1: MDF   5V/div.
⑬ CH2: MDR   5V/div.   10ms/div.
Search

⑭ FLAG   2V/div.   0.1ms/div.
Play

⑭ FLAG   2V/div.   0.1ms/div.
Search

⑥ CH1: FEY   0.2V/div.
③ CH2: FIN   0.5V/div.   20ms/div.
Normal mode: Play

⑧ CH1: FIN   0.5V/div.
⑩ CH2: SIN   1V/div.   0.5s/div.
Normal mode: Focus search
(12cm disc)

③ CH1: FIN   0.5V/div.
⑩ CH2: SIN   1V/div.   0.5s/div.
Normal mode: Focus search
(8cm disc)

⑮ PLCK   2V/div.   0.5µs/div.
Play

⑯ SCKO   2V/div.   1µs/div.
Play

⑰ Dout   2v/div.   10µs/div.
Play

circuit diagram.

| 0.5ms/div.
efect part passes | ⑧ CH1: TEY   0.5V/div.
⑨ CH2: TIN   0.5V/div. 20ms/div.
Normal mode: Play | ⑧ CH1: TEY 1V/div. 5ms/div.
㉓ CH2: CIN
Normal mode: Search | ⑩ SIN 0.5V/div. 50ms/div.
Normal mode: Play (12cm disc) | ⑱ LRCK 2V/div. 20µs/div.
Play | ⑲ CH1: VM 5V/div.
⑳ CH2: VMC 5V/div. 50ms/div.
Normal mode: No disc | ㉑ CH1: Lout 1V/div.
㉒ CH2: Rout 1V/div. 0.2ms/div.
Play (1kHz) |

Fig. 55

Fig. 55

Fig. 56

To TUNER AMP UNIT

Decimal points for resistor
and capacitor fixed values
are expressed as
2.2→2R2
0.022→R022

11.7 FM/AM TUNER UNIT (DEH-790/EW, X1B, DEH-690/EW, X1B)

Fig. 57

NOTE.

⊏⊐ Symbol indicates a resistor.
No differentiation is made between chip resistors and discrete resistors.

⊣⊢ Symbol indicates a capacitor.
No differentiation is made between chip capacitors and discrete capacitors.

Decimal points for resistor and capacitor fixed values are expressed as
2.2→2R2
0.022→R022

IC 51
PA4012B
FM TUNER

TO TUNER AMP UNIT

FM+B
L OUT
R OUT
MONO
ST
GND

SL (FM)
SD (FM)
VCO (FM)
LOC.H
TV (FM)
LOC.L
VCO (AM)
AM+B
SEEK
AM OUT
IF COUNT OUTPUT
SEEK
SL (AM)
TV (AM)

Decimal points for resistor
and capacitor fixed values
are expressed as
2.2→2R2
0.022→R022

Fig. 57

FM FRONT END

To TUNER AMP UNIT

Fig. 58

Fig. 59

Parts List

NOTE:
- The parts marked with "◉" may need long time to supply and their supply is subject to refuse as the case may be.
- Because the parts with encircled number shown on the dismantling drawing are not spare parts, we are unable to supply them in principle.

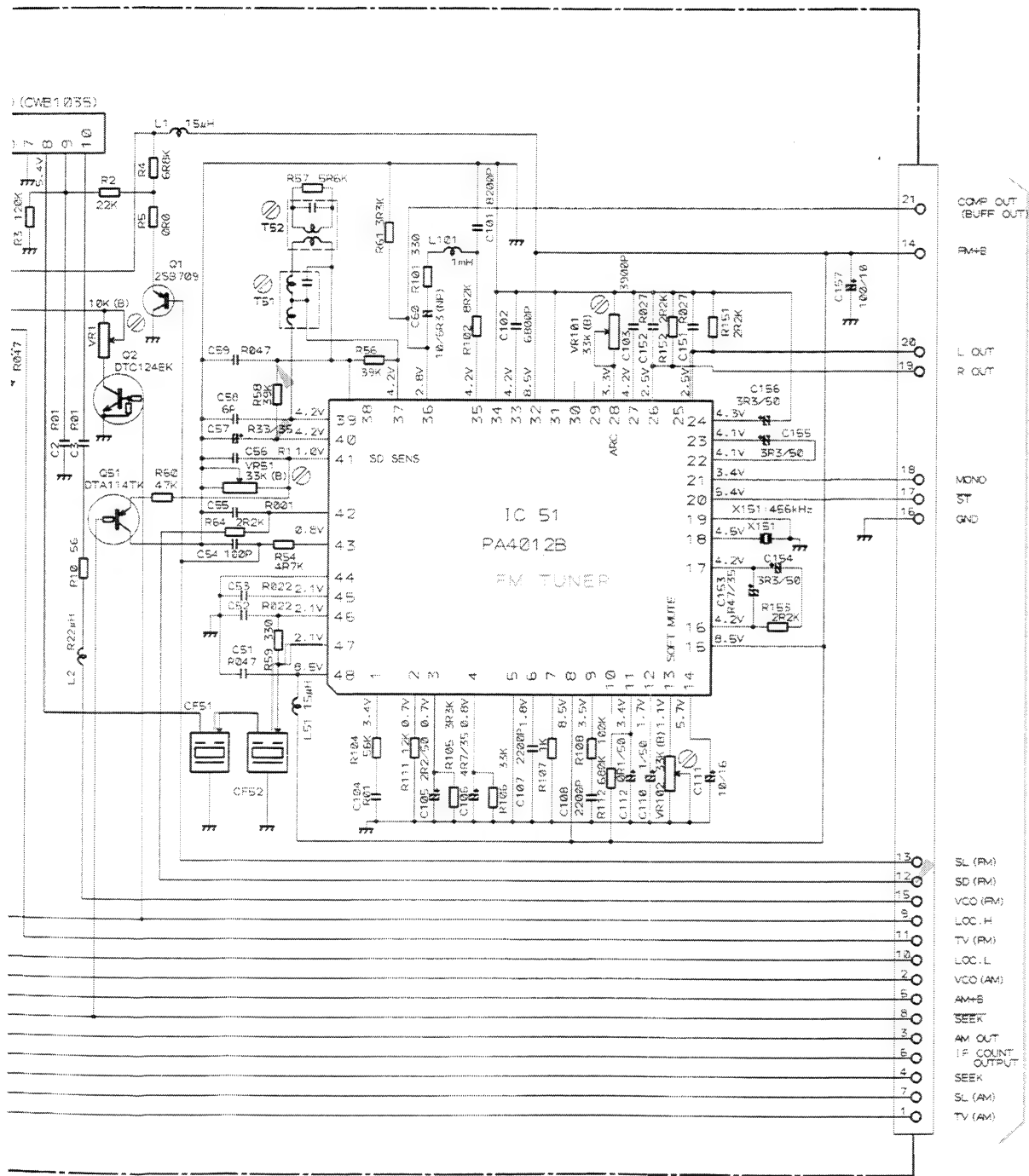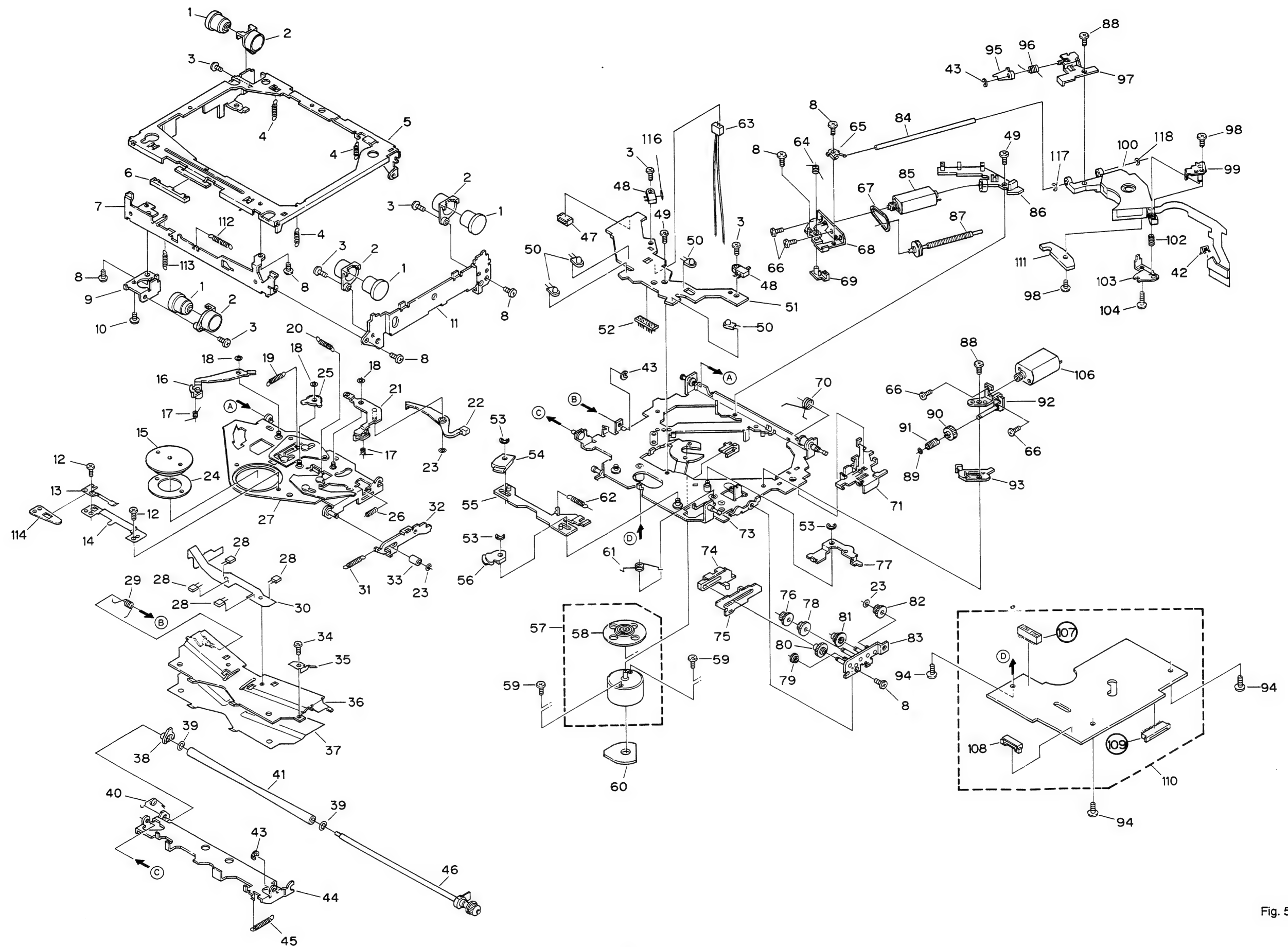| Mark No.	Description	Part No.	Mark No.	Description	Part No.
1	Damper	CNV2882	41	Roller	CNV2225
2	Holder	CNV2863	42	Short Pin	CBL1010
3	Screw	CBA1004	43	Washer	YE15FUC
4	Spring	CBH1417	44	Arm	CNC3819
5	Frame	CNC3816	45	Spring	CBH1421
6	Guide	CNV2891	46	Gear Unit	CXA4265
7	Frame	CNC3835	47	Connector (4P)	CKS2088
8	Screw	BMZ20P030FMC	48	Switch (S1,2)	CSN1012
9	Bracket	CNC3818	49	Screw	CBA1077
10	Screw	BMZ20P040FNI	50	LED (D1-4)	BR4361F
11	Frame	CNC3817	51	Gathering P.C. Board	CNX1759
12	Screw	JFZ20P018FNI	52	Connector (16P)	CKS2064
13	Spring	CBL1131	53	Washer	YE20FUC
14	Bracket	CNC3830	54	Arm	CNV2884
15	Clamper	CNV2864	55	Lever Unit	CXA4269
16	Arm Unit	CXA4271	56	Arm	CNV2885
17	Spring	CBH1415	57	Motor (Spindle)	CXM1058
18	Washer	CBF1039	58	Support Wheel	CNV2859
19	Spring	CBH1418	59	Screw	HBA-258
20	Spring	CBH1419	60	P.C. Board	CNP2720
21	Arm Unit	CXA4272	61	Spring	CBH1414
22	Arm	CNV2876	62	Spring	CBH1424
23	Washer	CBF1038	63	Connector (2P)	CDE3369
24	Sheet	CNM3110	64	Spring	CBH1410
25	Gear	CNV2875	65	Spring	CBL1129
26	Spring	CBH1423	66	Screw	JFZ20P025FMC
27	Arm Unit	CXA4259	67	Belt	CNT1047
28	Photo-transistor	PT4800	68	Bracket	CNC3832
29	Spring	CBH1449	69	Holder	CNV2878
30	P.C. Board	CNP2718	70	Spring	CBH1413
31	Spring	CBH1420	71	Cover	CNV2889
32	Lever	CNC3828	72	Holder	CNV3023
33	Roller	CLA1936	73	Chassis Unit	CXA4258
34	Screw	JFZ20P018FNI	74	Lever	CNV2874
35	Spring	CBL1130	75	Lever	CNC3824
36	Arm Unit	CXA4263	76	Gear	CNV2871
37	Sheet	CNM3111	77	Arm	CNC3833
38	Holder	CNV2866	78	Gear	CNV2872
39	Washer	HBF-132	79	Gear	CNV2883
40	Spring	CBH1412	80	Gear	CNV2873

Mark No.	Description	Part No.	Mark No.	Description	Part No.
81	Gear	CNV2870	101	.....	
82	Gear	CNV2869	102	Spring	CBH1422
83	Bracket Unit	CXA4261	103	Holder	CNC4306
84	Shaft	CLA2027	104	Screw	JGZ20P070FNI
85	Motor Unit (Carriage)	CXA4649	105	.....	
86	Holder	CNV2888	106	Motor Unit (Loading)	CXA4267
87	Screw Unit	CXA4266	107	Connector (CN352)	CKS2063
88	Screw	CBA1082	108	Connector (CN752)	CKS2149
89	Washer	CBF1054	109	Connector (CN351)	CKS2121
90	Gear	CNV2892	110	Control Unit (WG)	CWX1455
91	Gear	CNV2868		Control Unit (EW, X1B)	CWX1375
92	Bracket Unit	CXA4262	111	Weight	CNC4116
93	Holder	CNV2887	112	Spring	CBH1458
94	Screw	PMSZ6P040FMC	113	Spring	CBH1457
95	Rack	CNV2879	114	Spacer	CNM3315
96	Spring	CBH1411	◉ 115	CD Mechanism Unit	CXA4260
97	Bracket Unit	CXA4264	116	Cushion	CNT1057
98	Screw	JFZ17P030FNI	117	Washer	CBF1055
99	Holder Unit	CXA4606	118	Cushion	CNT1058
100	PU Unit	CGY1020			

1 2 3 4 5 6

13. CHASSIS EXPLODED VIEW

A A

B B

C C

D D

Fig. 60

1 2 3 4 5 6

• Parts List(DEH-790SDK/WG)

Mark No.	Description	Part No.	Mark No.	Description	Part No.
1	Remote Control Assy	CXA4436	41	Screw	BMZ30P140FMC
2	Battery Cover	CNS2197	42	Detach Unit	CXA4444
3	Screw	BPZ20P050FMC	43	Washer	WT22050D050
4	Holder	CNC4098	44	Lever	CNC3712
5	P.C.Board	CNP2647	45	Arm	CNC3711
6	Plate	CNM3367	46	Button	CAC2878
7	Socket	CKS2087	47	Arm	CNV2743
◉ 8	Display Unit	CWX1424	48	Spring	CBH1404
9	Screw	BPZ20P080FMC	49	Arm Unit	CXA4445
10	Connector	CNV2952	50	Arm	CNV2745
11	Holder	CNV2950	51	Spring	CBH1405
12	Lamp	CEL-147	52	Spacer	CNM3391
13	Lamp	CEL1013	53	Bracket Unit	CXA4053
14	Lens	CNV2951	54	Spring	CBH1403
15	LCD	CAW1143	55	Shaft	CLA1906
16	Holder	CNC3931	56	Holder Unit	CXA4697
17	Bush	CNV-724	57	Washer	YE15FUC
18	Plug	CKS2360	58	Grille Unit	CXA4634
19	Spacer	CNM3379	59	Screw	BMZ20P040FZK
20	Seal	CNM3345	60	Screw	BPZ20P100FZK
21	Cushion	CNM3416	61	Cover	CNS2202
22	Button(VOL)	CAC3093	62	Cover Unit	CXA4483
23	Spring	CBH1407	63	.....	
24	Button(Detach)	CAC3152	64	Holder	CNC1484
25	Spacer	CNM3351	65	Screw	BMZ26P040FMC
26	Lens	CNV2955	◉ 66	CD Mechanism Module	CXK2511
27	Button(LOUD,REL,TUN)	CAC3088	67	Connector Unit	CXA4721
28	Cushion	CNM3255	68	Holder	CNV2956
29	Button(EJECT)	CAC3094	69	Heat Sink	CNR1202
30	Button(SDK)	CAC3306	70	Bracket	CNC3930
31	Button(SOURCE)	CAC3095	71	IC(IC551)	HA13139
32	Handle	CNC1631	72	IC(IC951)	PA2019A
33	Grille Unit	CXA4357	73	Spacer	CNM3415
34	Cushion	CNM3413	74	Holder	CNC3708
35	Button(1—6)	CAC3092	75	Buzzer	CPV1010
36	Button(BSM,CLOCK)	CAC3089	76	Spacer	CNM3414
37	Case	CNS2269	77	Connector	CKM1090
38	Screw	BMZ30P050FMC	78	Spacer	CNM3394
39	Case	CNB1458	79	Connector	CKS1534
40	Insulator	CNM3193	80	Connector	CKS2500

Mark No.	Description	Part No.	Mark No.	Description	Part No.
81	Insulator	CNM3022	◉ 96	FM/AM Tuner Unit	CWE1256
82	Bush	CNV1917	97	Case	CNB1279
83	Screw	CBA1002	98	Holder	CNC2880
84	Holder	CNC3940	99	FM Front End	CWB1035
85	Chassis Unit	CXA4363	100	Insulator	CNM2105
86	Cord	CDE3475	101	Antenna Jack	CKX1010
87	Cap	CNW-829	102	Plate	CNC3382
88	.....		103	Plug	CKS1735
89	Plug	CKS1228	104	Insulator	CNM2391
90	.....		105	Case	CNB1280
91	Holder	CNC3849	106	Screw	PMS20P060FMC
92	Transistor(Q968)	2SD1944	107	.....	
93	.....		108	Cord	CDE3480
◉ 94	Tuner Amp Unit	CWX1414	109	Resistor	RS1/2P102JL
95	Antenna Cable	CDH1129	110	Cap	CNS1472

• The DEH-790/EW,X1B,DEH-690SDK/WG and DEH-690/EW,X1B Parts Lists enumerate the parts which differ from those enumerated in the DEH-790SDK/WG Parts List only. The parts other than those enumerated in the former are indentical with those in the latter, to which you are requested to refer,accordingly. The DEH-790SDK/WG Parts List is given on page 105.

Mark No.	Description	DEH-790SDK/WG	DEH-790/EW DEH-790/X1B	DEH-690SDK/WG	DEH-690/EW DEH-690/X1B
		Part No.	Part No.	Part No.	Part No.
1	Remote Control Assy	CXA4436	CXA4436	.....	.....
2	Battery Cover	CNS2197	CNS2197	.....	.....
◉ 8	Display Unit	CWX1424	CWX1425	CWX1427	CWX1428
30	Button(SDK)	CAC3306	.....	CAC3306	.....
33	Grille Unit	CXA4357	CXA4358	CXA4636	CXA4635
37	Case	CNS2269	CNS2269	.....	.....
◉ 66	CD Mechanism Module	CXK2511	CXK2500	CXK2511	CXK2500
70	Bracket	CNC4344	CNC4344	CNC4345	CNC4345
85	Chassis Unit	CXA4363	CXA4677	CXA4633	CXA4677
86	Cord	CDE3475	CDE3475	.....	.....
87	Cap	CNW-829	CNW-829	.....	.....
88	Cord	.....	.....	CDE3476	CDE3476
89	Plug	CKS1228	CKS1228	.....	.....
90	Plug	.....	.....	CKS1224	CKS1224
93	Insulator	.....	CNM3341	.....	CNM3341
◉ 94	Tuner Amp Unit	CWX1414	CWX1415	CWX1418	CWX1419
◉ 96	FM/AM Tuner Unit	CWE1256	CWE1228	CWE1256	CWE1228
97	Case	CNB1279	.....	CNB1279	.....
103	Plug	CKS1735	CKS1628	CKS1735	CKS1628
104	Insulator	CNM2391	.....	CNM2391	.....
105	Case	CNB1280	.....	CNB1280	.....
107	Cap	.....	.....	CNW-829	CNW-829
108	Cord	CDE3480	CDE3556	CDE3480	CDE3556

14. PACKING METHOD

*:Non spare part

Mark No.	Description	DEH-790SDK/WG Part No.	DEH-790/EW Part No.	DEH-790/X1B Part No.	DEH-690SDK/WG Part No.	DEH-690/EW Part No.	DEH-690/X1B Part No.
1	Carton	CHG2168	CHG2170	CHG2195	CHG2169	CHG2171	CHG2194
2-1	Owner's Manual	CRD1544	CRD1545	CRD1547	CRD1544	CRD1545	CRD1547
2-2	Installation Manual	CRD1546	CRD1546	.....	CRD1546	CRD1546	.....
* 2-3	Card	CRY-062	CRY-062	CRY-063	CRY-062	CRY-062	CRY-063
* 2-4	Caution Card	CRN1007	.....	.....	CRN1007	.....	.....
* 2-5	Passport	CRY1013	.....	.....	CRY1013	.....	.....
2-6	Polyethylene Bag	E36-618	.....	.....	E36-618	.....	.....
3	Cord	CDE3480	CDE3556	CDE3556	CDE3480	CDE3556	CDE3556
4	Case	CNS2269	CNS2269	CNS2269	.....	.....	.....
5	Styrofoam(R)	CHP1463	CHP1463	CHP1463	CHP1463	CHP1463	CHP1463
6	Styrofoam(L)	CHP1462	CHP1462	CHP1462	CHP1462	CHP1462	CHP1462
7	Cover	CEG1092	CEG1092	CEG-173	CEG1092	CEG1092	CEG-173
8	Remote Control Assy	CXA4436	CXA4436	CXA4436	.....	.....	.....
* 9-1	Battery	CEX1006	CEX1006	CEX1006	.....	.....	.....
9-2	Fastener(Rough)	CNM3249	CNM3249	CNM3249	.....	.....	.....
9-3	Fastener(Soft)	CNM3250	CNM3250	CNM3250	.....	.....	.....
* 9-4	Polyethylene Bag	CEG-127	CEG-127	CEG-127	.....	.....	.....
10	Accessory Assy	CEA1692	CEA1692	CEA1692	CEA1692	CEA1692	CEA1692

10	Accessory Assy	CEA1692
Mark No.	Description	Part No.
* 10-1	Screw Assy	CEA1105
10-1-1	Screw(×1)	CBA-102
10-1-2	Screw(×1)	CBA1002
10-1-3	Nut(×2)	NF50FMC
*10-1-4	Polyethylene Bag	CEG-127
10-2	Handle(×2)	CNC1631
10-3	Strap	CNF-111
10-4	Bush	CNV1917
* 10-5	Polyethylene Bag	CEG-158

2-1 Owner's Manual

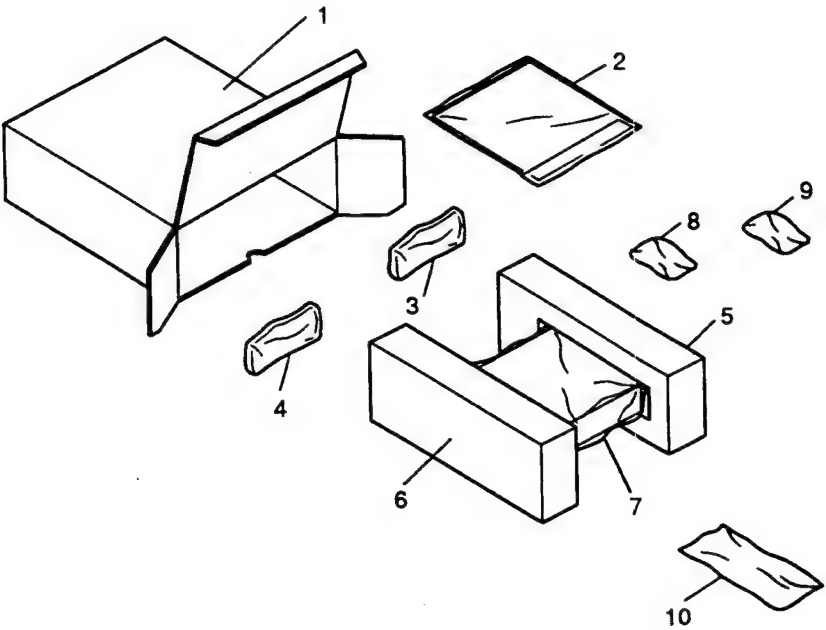| Part No.	Model	Language
CRD1544	DEH-790SDK/WG DEH-690SDK/WG	French, German
CRD1545	DEH-790/EW DEH-690/EW	English, French, German, Spanish, Swedish, Norwegian, Dutch, Italian, Finnish, Portuguese
CRD1547	DEH-790/X1B DEH-690/X1B	English, French, Italian

Fig. 61

23

15. ELECTRICAL PARTS LIST

NOTE:

● Parts whose parts numbers are omitted are subject to being not supplied.

● The part numbers shown below indicate chip components.

Chip Resistor

RS1/□S□□□J,RS1/□□S□□□J

Chip Capacitor (except for CQS.....)

CKS....., CCS....., CSZS.....

• DEH-790SDK

Unit Number :
Unit Name : FM/AM Tuner Unit

MISCELLANEOUS

======Circuit Symbol & No. Part Name======									Part No.
IC 51									PA4012B
IC 201									PA4017
Q 1									2SB709
Q 2									DTC124EK
Q 51									DTA114TK
Q 201									2SK435
Q 202									2SC2412K
Q 203	205								DTC124EK
D 201	204								MA157-MR
D 205									SVC203-M
L 1	51				Inductor				CTF1241
L 2					Inductor				CTF1086
L 101					Inductor				CTF1126
L 201					Inductor				CTF1084
L 203					Ferri-Inductor				LAU220K
L 204					Ferri-Inductor				LAU470K
L 205					Ferri-Inductor				LAU4R7K
T 51					Coil				CTE1021
T 52					Coil				CTE1022
T 201					Coil				CTB1020
T 202					Coil				CTB1004
T 203					Coil				CTB1040
T 204					Coil				CTE1037
T 205					Coil				CTE1038
T 206					Coil				CTE1039
CG 1									DSP-201M
CF 51	52				Ceramic Filter				CTF-182
CF 201					Ceramic Filter				CTF1041
CF 202					Filter				CTF1085
X 151					Ceramic Resonator				CSS1055
X 201					Crystal Resonator				CSS1014
VR 1					Semi-fixed 10kΩ (B)				CCP1019
VR 51	101	102			Semi-fixed 33kΩ (B)				VRTB4VS333
					FM Front End				CWB1035

RESISTORS

R 2	7		RS1/10S223J
R 3			RS1/10S124J
R 4			RS1/10S682J
R 5	13		RS1/10S0R0J
R 6	59	101	RS1/10S331J
R 10			RS1/10S560J
R 15			RS1/10S0R0J
R 54			RS1/10S472J
R 56	58		RS1/10S393J
R 57			RS1/10S562J
R 60			RS1/10S473J
R 61	105		RS1/10S332J
R 64			RS1/10S222J
R 102			RS1/10S822J
R 104			RS1/10S563J

======Circuit Symbol & No. Part Name======			Part No.
R 106			RS1/10S333J
R 107			RS1/10S102J
R 108			RS1/10S104J
R 111			RS1/10S123J
R 112			RS1/10S684J
R 151	152	153	RS1/10S222J
R 201			RS1/10S220J
R 202			RS1/10S681J
R 203	206	214	RS1/10S222J
R 204	213		RS1/10S473J
R 205	209		RS1/10S470J
R 207			RS1/10S822J
R 208	211	212	RS1/10S103J
R 210			RS1/10S682J
R 215			RS1/10S153J

CAPACITORS

C 1			CKSQYB102K50
C 2	3	104	CKSQYB103K50
C 4	59		CKSQYF473Z25
C 51			CKSQYF473Z25
C 52	53		CKSQYB223K25
C 54			CCSQSL101J50
C 55			CKSQYB102K50
C 56			CKSQYF104Z25
C 57			CSZAR33K35
C 58			CCSQCH060D50
C 60			CEALNP100M6R3
C 101			CKSQYB822K50
C 102			CKSQYB682K50
C 103			CKSQYB392K50
C 105			CEA2R2M50LL
C 106			CEA4R7M35LL
C 107	108		CKSQYB222K50
C 110			CEA010M50LL
C 111			CEA100M16LL
C 112			CEA0R1M50LL
C 151	152		CKSQYB273K25
C 153			CSZAR47M35L
C 154	155	156	CEA3R3M50LL
C 157			CEA101M10LS
C 201	223	228	CKSQYB103K25
C 202	212		CKSQYB332K50
C 203	215	216	219	226	CKSQYF473Z25
C 204	208	210	CKSQYB223K25
C 205			CCSQCH220J50
C 206	207		CCSQCH820J50
C 211			CEA2R2M50LL
C 213			CCSQCH390J50
C 217			CEA100M16LL
C 218			CEA2R2M35NPLL
C 220			CCSQCH430J50

======Circuit Symbol & No. Part Name======	Part No.
C 221	CCSQCH100D50
C 222	CSZA010K35L
C 224	CEA470M16LL
C 225	CKSQYB333K25
C 227	CEA4R7M35LS
C 229	CEA470M16LS
C 230	CEA220M16LL

Unit Number :
Unit Name : Control Unit

MISCELLANEOUS

IC 351	UPC1347GS
IC 601	UPD6374GH
IC 602	RC4558M
IC 651	PA3026
IC 653	M5218FP
IC 701	UPD6375GC
IC 702	TC9237F-PK
IC 703	TA2009F
IC 751	PD5156B
IC 752	MB3854PF
Q 351	2SB1260
Q 601	2SB709A
Q 651	2SB1184F5
Q 652	2SB1184F5
Q 654	705	DTC114EK
Q 701	702	DTC323TK
Q 703	DTC114EK
Q 704	DTA114EK
Q 752	DTA114EK
Q 753	DTA114EK
Q 754	DTC114EK
Q 755	2SD1760F5
Q 756	2SD1030
D 651	SC016-2
D 652	SC016-2
D 701	MA151WA-MN
D 751	MA151A-MA
D 757	HZM6R8NB2
D 758	MA151A-MA
L 601	602	603	604	751	Inductor	CTF1082
L 701	Inductor	CTF1082
TH 752	Thermister	CCX1007
X 701	Crystal Resonator	CSS1067
X 751	CSS1084
VR 351	CCP1156
VR 352	355	CCP1158
VR 353	354	CCP1150
VR 356	CCP1156

RESISTORS

R 352	372			RS1/16S472J
R 353				RS1/16S623J
R 354	757	758	779	RS1/16S473J
R 355				RS1/16S122J
R 356				RS1/16S683J
R 357				RS1/16S683J
R 358				RS1/16S332J
R 359				RS1/16S332J
R 360				RS1/16S684J
R 361				RS1/16S153J
R 364				RS1/16S102J
R 369				RS1/16S103J
R 371	373			RS1/16S223J
R 374				RS1/16S912J

======Circuit Symbol & No. Part Name======							Part No.
R 375	377	713					RS1/16S102J
R 379							RS1/16S513J
R 380							RS1/16S104J
R 381							RS1/16S133J
R 382							RS1/16S133J
R 601	602	603	604	605	607	610	RS1/16S103J
R 606							RS1/16S224J
R 609							RS1/16S102J
R 611	612	665					RS1/16S102J
R 613							RS1/16S102J
R 614							RS1/16S472J
R 615							RS1/16S472J
R 616							RS1/16S472J
R 651	653	701	702	706	711	712	764	RS1/16S102J
R 652							RS1/16S162J
R 654							RS1/16S162J
R 655							RS1/16S752J
R 656							RS1/16S362J
R 657							RS1/16S162J
R 658							RS1/16S102J
R 663							RS1/10S181J
R 664	753	755					RS1/16S103J
R 669	703	797					RS1/16S103J
R 670							RS1/10S151J
R 675							RS1/16S913J
R 676							RS1/16S913J
R 677	681						RS1/16S0R0J
R 679							RS1/16S102J
R 680							RS1/16S0R0J
R 683							RS1/16S0R0J
R 684							RS1/16S102J
R 707	708						RS1/16S223J
R 715							RS1/16S0R0J
R 717							RS1/16S301J
R 719	789						RS1/16S0R0J
R 721							RS1/16S472J
R 722							RS1/16S162J
R 724							RS1/10S1R0J
R 725							RS1/16S472J
R 751							RS1/10S1R0J
R 752							RS1/16S183J
R 754	776						RS1/16S472J
R 756	771	772	773				RS1/16S222J
R 765	793						RS1/16S162J
R 766							RS1/16S473J
R 767	768	769	770				RS1/16S104J
R 774							RS1/16S102J
R 775							RS1/16S104J
R 778							RS1/16S103J
R 780							RS1/16S104J
R 781	782						RS1/16S362J
R 783	784	785	786	787			RS1/16S681J
R 788							RS1/16S162J
R 791	792						RS1/16S391J
R 794							RS1/16S151J
R 799							RS1/10S1R5J

CAPACITORS

C 351			CEV470M16
C 352			CKSQYB104K25
C 353	709		CEV101M6R3
C 354	355		CSZSR4R7M10
C 357	359	366	CKSRYB102K50
C 358			CKSRYB331K50
C 360			CKSRYB271K50
C 361			CCSRCH220J50
C 367			CKSYB154K25
C 368			CKSQYB104K25

======Circuit Symbol & No. Part	Name======	Part No.
C 369 373 604 606 703 704		CKSYB224K25
C 370		CKSQYB473K50
C 601		CKSRYB222K50
C 602		CKSRYB222K50
C 603		CKSRYB331K50
C 605		CKSYB103K25
C 607 654 759 760		CKSYB224K25
C 608		CSZS010M16
C 609 610 761		CEV100M16
C 611 701 707 710		CKSRYB103K25
C 651 702 708		CEV101M6R3
C 652		CKSYB224K25
C 655 668		CKSRYB391K50
C 658	470 μF/10V	CCH1120
C 662 665		CEV101M10
C 666		CKSQYB102K50
C 670		CKSQYB273K50
C 671		CKSRYB103K25
C 672		CKSQYB473K25
C 705 706		CCSRCH090D50
C 712		CEV470M6R3
C 713 714		CKSRYB561K50
C 715		CCSRCH100D50
C 716		CEV100M16
C 722 723		CEV4R7M35
C 724		CCSRCH151J50
C 726		CCSRCH100D50
C 727 728		CKSRYB103K25
C 751 752		CCSRCH221J50
C 753 754 755		CCSRCH221J50
C 756		CKSRYB472K50

Unit Number :
Unit Name : Tuner Amp Unit

MISCELLANEOUS

IC 451		PMJ001A
IC 501		LC7218HS
IC 502		KHA172
IC 551		HA13139
IC 751		PD4389C
IC 752		M51957AL
IC 851		RC4558S
IC 951		PA2019A
Q 501 502 503 507 509		2SC2712
Q 504 754 952 953 956 959 961 965 970 963		UN2211
Q 505		2SC3295
Q 506		UN2212
Q 508		2SC3098
Q 751 753 860 969		UN2111
Q 755 958 960 964		2SB1238
Q 851 852		2SD1048
Q 853 854		2SD601A
Q 855 856 857 858		2SD1781K
Q 968		2SD1944
D 501 505 506 997		MA151WK-MT
D 503		MA153-MC
D 751 754 853 854 855 856 952 963		1SS133
D 953		ERC04-02F
D 954		ERA15-10
D 955		ERA15-10
D 959		HZS9C3L
D 960		ERA15-02
D 962		RD4R7JSB2
D 964		1SS133
L 501 952	Inductor	CTF1006

======Circuit Symbol & No. Part	Name======	Part No.
L 951	Ferri-Inductor	LAU220K
L 953	Ferri-Inductor	LAU330K
TC 751	Trimmer	CCL1017
IB 551		CWW1338
IB 752		CWW1336
IB 753		CWW1337
X 501	Crystal Resonator	CSS1030
X 502	Ceramic Resonator	CSS1061
X 751	Crystal Resonator	CSS1023
BZ 751	Buzzer	CPV1010

RESISTORS

R 451		RS1/10S152J
R 452 460		RS1/10S151J
R 453 459 857 858		RS1/10S272J
R 454 455 456		RD1/4PM472J
R 457		RS1/10S103J
R 458		RS1/10S223J
R 501		RS1/10S684J
R 502		RS1/10S102J
R 503 783		RS1/10S104J
R 505 511 756 757 758 759 760 761 762		RS1/10S103J
R 506 510 515 517 518 529 530 555 556 967		RS1/10S472J
R 507 532		RD1/4PS222JL
R 508 540 767		RS1/10S474J
R 509		RS1/10S122J
R 513 523 525 526 527 528 784 891 892 893		RS1/10S222J
R 514 534		RS1/10S182J
R 516 524 531 755 765 766 786 787 788 792		RS1/10S473J
R 519 522		RS1/10S153J
R 521		RS1/10S563J
R 533 991		RS1/10S221J
R 535 972		RS1/10S821J
R 536 537		RS1/10S101J
R 538		RS1/10S470J
R 539		RD1/4PS472JL
R 541		RS1/10S273J
R 551 552 553 554		RD1/4PS2R2JL
R 557 558		RD1/4PM682J
R 559		RS1/10S472J
R 562 563 768 769 770 796 881 882		RS1/10S0R0J
R 564		RS1/8S0R0J
R 751 752 753 754		RD1/4PS362JL
R 763 790 962 964 975		RS1/10S103J
R 764		RS1/10S683J
R 771 772 773		RD1/4PM221J
R 774 775 776 782		RD1/4PS682JL
R 779 781		RD1/4PS221JL
R 780		RD1/4PS473JL
R 785		RS1/10S100J
R 789		RD1/4PM103J
R 793 794		RS1/10S473J
R 851 852		RS1/10S392J
R 853 854		RS1/10S104J
R 855 856		RS1/10S273J
R 859 860		RS1/10S392J
R 861 862		RS1/10S332J
R 863 864		RS1/10S433J
R 869 870 877		RS1/10S102J
R 871 872 879 880 955 956		RS1/10S223J
R 878		RD1/4PS102JL
R 889 890		RD1/4PS393JL
R 894 895 896 897 898		RS1/10S222J
R 951 968 969 971		RD1/2PS102JL
R 953 954		RS1/10S241J
R 963 965		RS1/10S562J
R 970		RS1/10S752J

======Circuit Symbol & No. Part	Name======	Part No.
R 976		RD1/4PM562J
R 977		RD1/4PS392JL
R 978		RS1/10S472J
R 979		RS1/10S560J
R 981		RS1/10S0R0J
R 999		RD1/4PS104JL

CAPACITORS

C 451 453 469 502 508 511 527 531 753 877	CKSQYB103K25
C 452 470 952	CEA010M50LL
C 454 460 462 468 471 475 476 558 757 851	CEA100M16LL
C 455 467 472	CEA2R2M50LL
C 456 466	CKSQYB333K25
C 457 465 519 520	CCSQSL101J50
C 458 464	CKSQYB183K2K
C 459 463 882 883 884 885	CCSQSL221J50
C 461 474 513 515 518 759 957 961 963 966	CKSQYB473K25
C 473 525	CEA470M16LL
C 477 478 516 752	CKSQYB102K50
C 501 514	CKSQYB223K50
C 503 504 505	CKSQYB104K25
C 506 507 754 967 968	CKSQYB104K25
C 509	CCSQCH330J50
C 510	CEALNP4R7M16
C 512	CEAR47M50LL
C 517	CKSQYB561K50
C 522 523	CCSQCH270J50
C 524	CEA4R7M35LL
C 526	CKSQYB683K25
C 528	CEA220M16LL
C 530	CEAR33M50LL
C 551 552 553 554	CQMA104K50
C 555 556	CKSQYB471K50
C 751	CKSQYB471K50
C 755	CCSQCH150J50
C 756	CKSQYB104K25
C 852 853 854 855 865 866 875 876 976	CEA100M16LL
C 856	CEA100M25LL
C 859 860	CCSQCH220J50
C 887	CEA100M16LL
C 953	3300 μF/16V	CCH1125
C 954	CKSQYB104K25
C 956	CKSQYB472K50
C 960 962 964 969	CEA101M10LL
C 965	CEA470M25LL
C 970 973 974	CKSQYB473K25
C 972	1000 μF/16V	CCH1003
C 975	CEHAQ221M10
C 978	CKSYB473K50
C 979	CEA101M10LS
C 980	CEA101M10LS

Unit Number :
Unit Name : Display Unit

MISCELLANEOUS

IC 901		LC7582E
IC 903		RS-20
D 901 902 904 905		MA153-MC
S 901 902 903 904 906 908 909 910 911 912	CSG1041
S 913 914 916 917 918 919 920 922 Switch	CSG1041
IL 901 902 909 910 911 912	Lamp 14V40mA	CEL-147
IL 904 905 906 907 908	Lamp 14V40mA	CEL1013
	LCD	CAW1143

======Circuit Symbol & No. Part	Name======	Part No.

RESISTORS

R 901		RS1/8S103J
R 902 904 905		RS1/8S103J
R 907		RS1/10S121J
R 910 911		RS1/10S0R0J
R 914 918		RS1/10S104J
R 925 930 935		RS1/10S162J
R 926 931 936		RS1/10S242J
R 927 932 937		RS1/10S392J
R 928 933 938		RS1/10S822J
R 929 934 939		RS1/10S303J
R 940		RS1/8S163J

CAPACITORS

C 901		CEV470M6R3
C 903		CKSQYF103Z50
C 906		CKSQYF104Z25
C 907		CCSQCH301J50
C 912		CKSYF224Z25

Unit Number :
Unit Name : Switch P.C.Board

D 1 2 3 4			BR4361F
M 1		Motor(Spindle)	CXM1058
M 2		Motor Unit(Carriage)	CXA4649
M 3		Motor Unit(Loading)	CXA4267
S 1 2		Switch(Home,Clamp)	CSN1012

Unit Number :
Unit Name : Detector P.C.Board

P 1 2 3 4	PhotoTransistor	PT4800

MiscellaneousParts List

	PU Unit	CGY1020

● Tuner Amp Unit

Circuit Symbol & No.	DEH-790SDK/WG	DEH-790/X1B DEH-790/EW	DEH-690SDK/WG	DEH-690/X1B DEH-690/EW
IC 502	KHA172	.....	KHA172	.....
Q 501	2SC2712	.....	2SC2712	.....
Q 853 854	2SD601A	.....	2SD601A	.....
Q 857 858	2SD1781K	2SD1781K	.....	.....
X 502	CSS1061	.....	CSS1061	.....
R 501	RS1/10S684J	.....	RS1/10S684J	.....
R 502	RS1/10S102J	.....	RS1/10S102J	.....
R 523	RS1/10S222J	.....	RS1/10S222J	.....
R 524	RS1/10S473J	.....	RS1/10S473J	.....
R 562	RS1/10S0R0J	.....	RS1/10S0R0J	.....
R 791	.....	RS1/10S473J	RS1/10S473J	.....
R 794	RS1/10S473J	.....	RS1/10S473J	.....
R 796	RS1/10S0R0J	.....	.....	RS1/10S0R0J
R 799	.....	RS1/10S0R0J	.....	RS1/10S0R0J
R 877	RS1/10S102J	RS1/10S102J	.....	.....
R 878	RD1/4PS102JL	RD1/4PS102JL	.....	.....
R 879 880	RS1/10S223J	RS1/10S223J	.....	.....
R 893 894	RS1/10S222J	.....	RS1/10S222J	.....
R 897 898	RS1/10S222J	RS1/10S222J	.....	.....
C 514	CKSQYB223K50	.....	CKSQYB223K50	.....
C 519	CCSQSL101J50	CCSQSL221J50	CCSQSL101J50	CCSQSL221J50
C 524	CEA4R7M35LL	.....	CEA4R7M35LL	.....
C 525	CEA470M16LL	.....	CEA470M16LL	.....
C 526	CKSQYB683K25	.....	CKSQYB683K25	.....
C 527	CKSQYB103K25	.....	CKSQYB103K25	.....
C 528	CEA220M16LL	.....	CEA220M16LL	.....
C 530	CEAR33M50LL	.....	CEAR33M50LL	.....
C 875 876	CEA100M16LL	CEA100M16LL	.....	.....
C 884 885	CCSQSL221J50	CCSQSL221J50	.....	.....
C 979	CEA101M10LS	CEA101M10LS	CEA101M10LL	CEA101M10LL

● Display Unit

Circuit Symbol & No.	DEH-790SDK/WG	DEH-790/X1B DEH-790/EW	DEH-690SDK/WG	DEH-690/X1B DEH-690/EW
IC 903	RS-20	RS-20	.....	.....
D 905	MA153-MC	MA153-MC	.....	.....
S 912	CSG1041	.....	CSG1041	.....
R 901	RS1/8S103J	RS1/8S103J	.....	.....
R 907	RS1/10S121J	RS1/10S121J	.....	.....
C 901	CEV470M6R3	CEV470M6R3	.....	.....
C 903	CKSQYF103Z50	CKSQYF103Z50	.....	.....

● Control Unit

Circuit Symbol & No.	DEH-690SDK/WG DEH-790SDK/WG	DEH-690/X1B DEH-790/X1B DEH-690/EW DEH-790/EW
IC 705	.....	TC74HC74AF
C 729	.....	CKSQYB104K25
R 714	.....	RS1/16S0R0J
R 715	RS1/16S0R0J	.....

● FM/AM Tuner Unit

Circuit Symbol & No.	DEH-690SDK/WG DEH-790SDK/WG	DEH-690/X1B DEH-790/X1B DEH-690/EW DEH-790/EW
Q 51	DTA114TK	.....
R 60	RS1/10S473J	.....

11.2 TUNER AMP UNIT AND DISPLAY UNIT (DEH-790/EW, X1B)

TUNER AMP UNIT

NOTE :
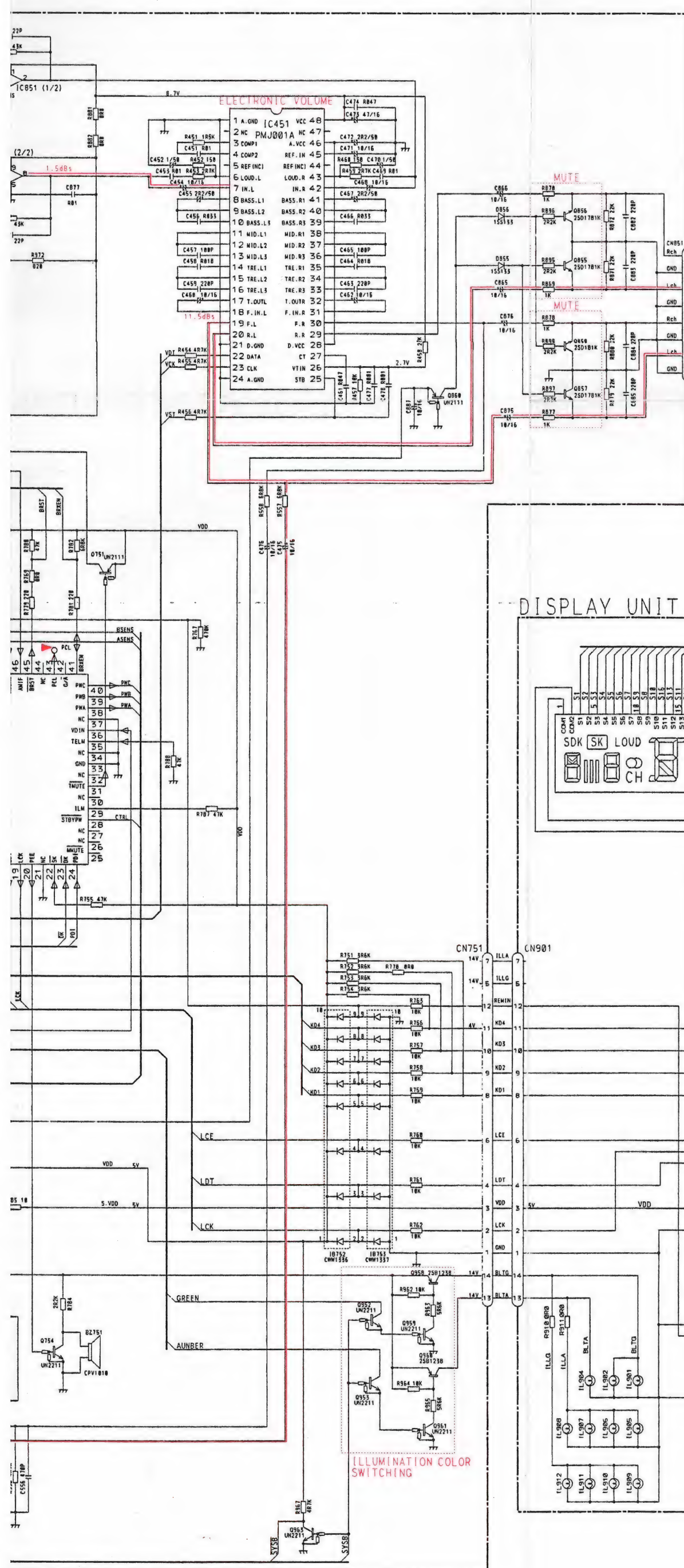⊏⊐ Symbol indicates a resistor.
No differentiation is made between chip resistors and discrete resistors.

⊣⊢ Symbol indicates a capacitor.
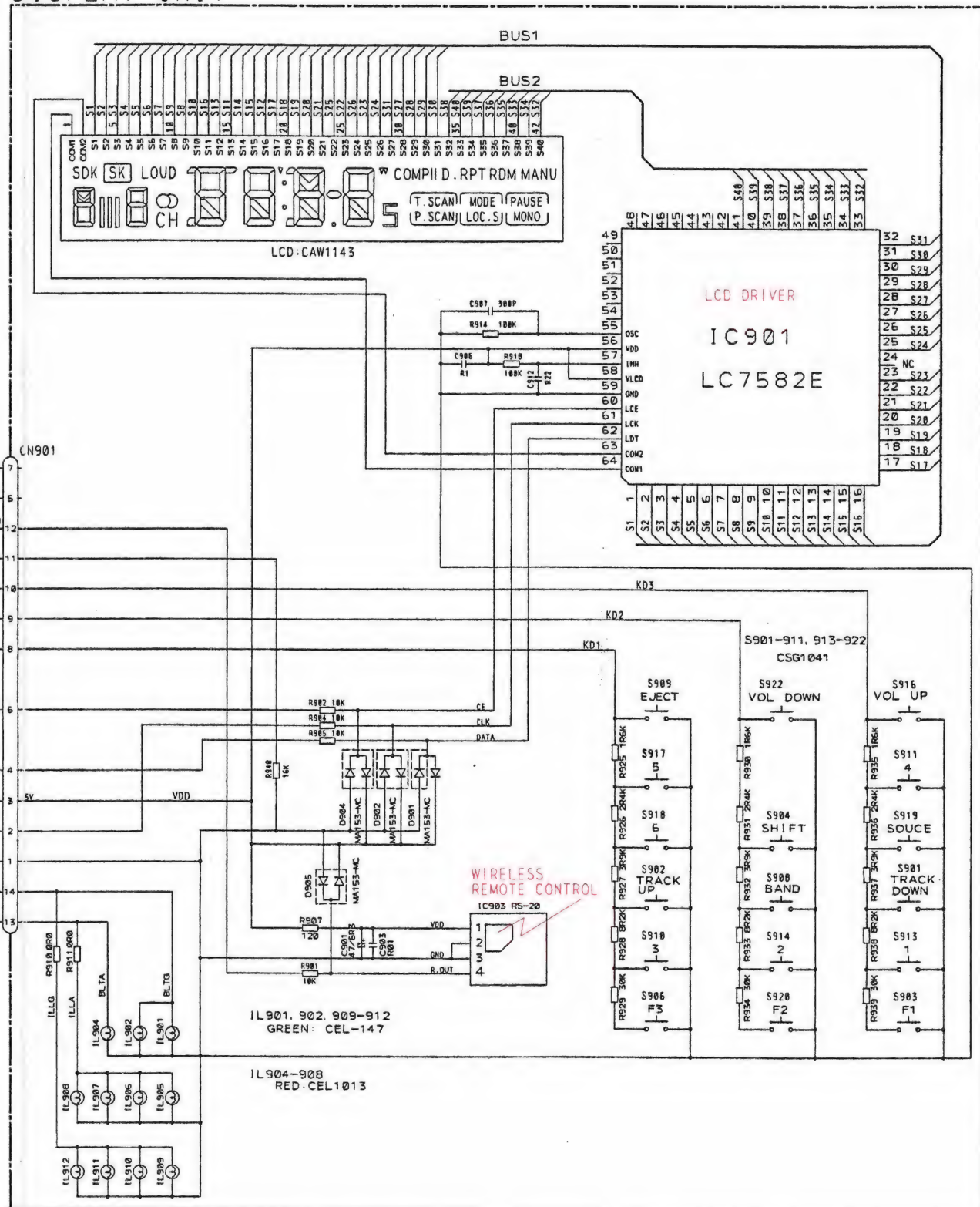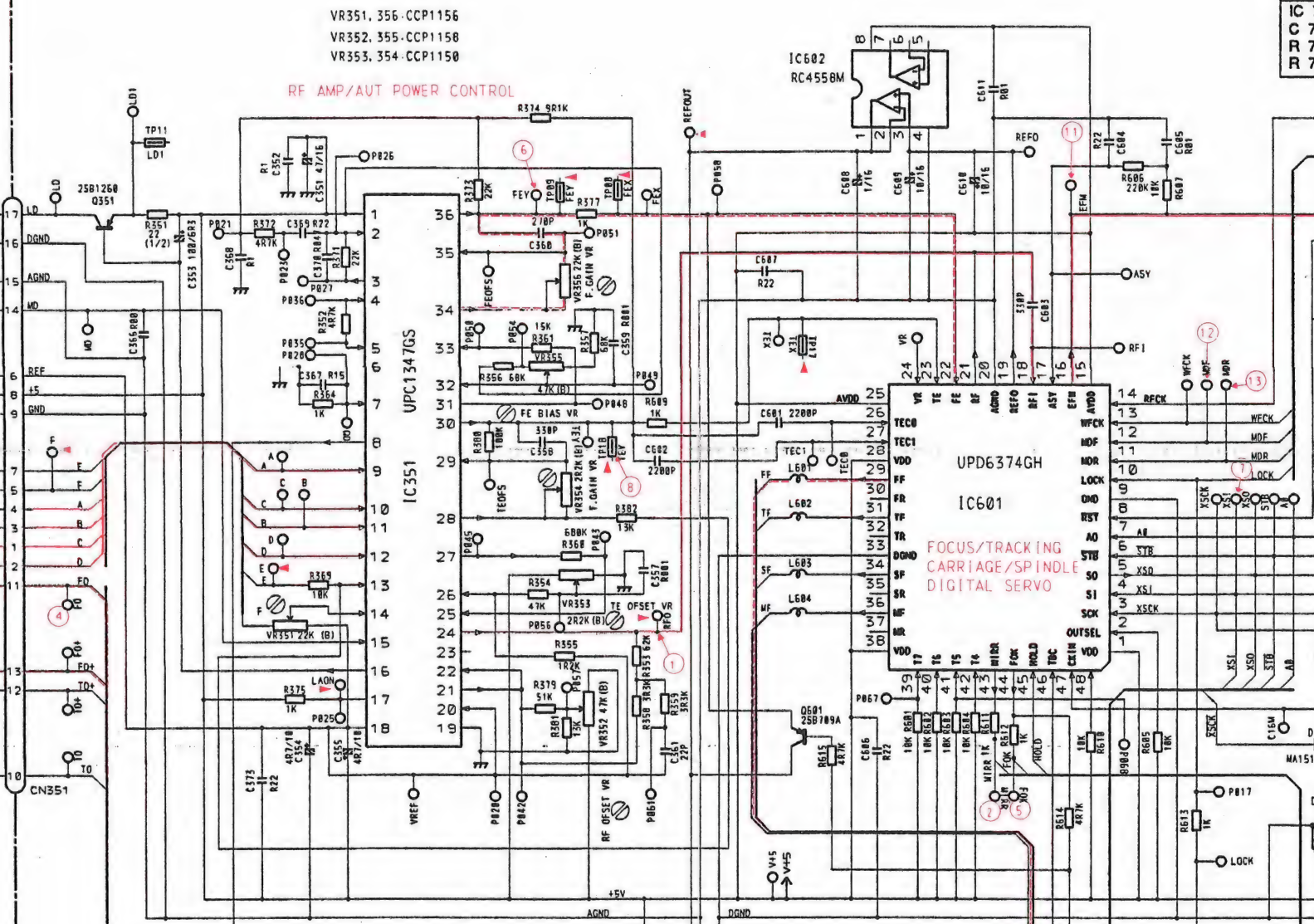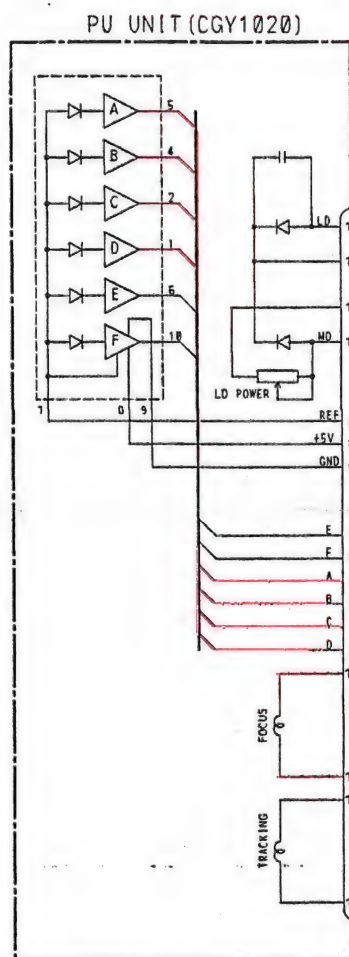No differentiation is made between chip capacitors and discrete capacitors.

ELECTRONIC VOLUME

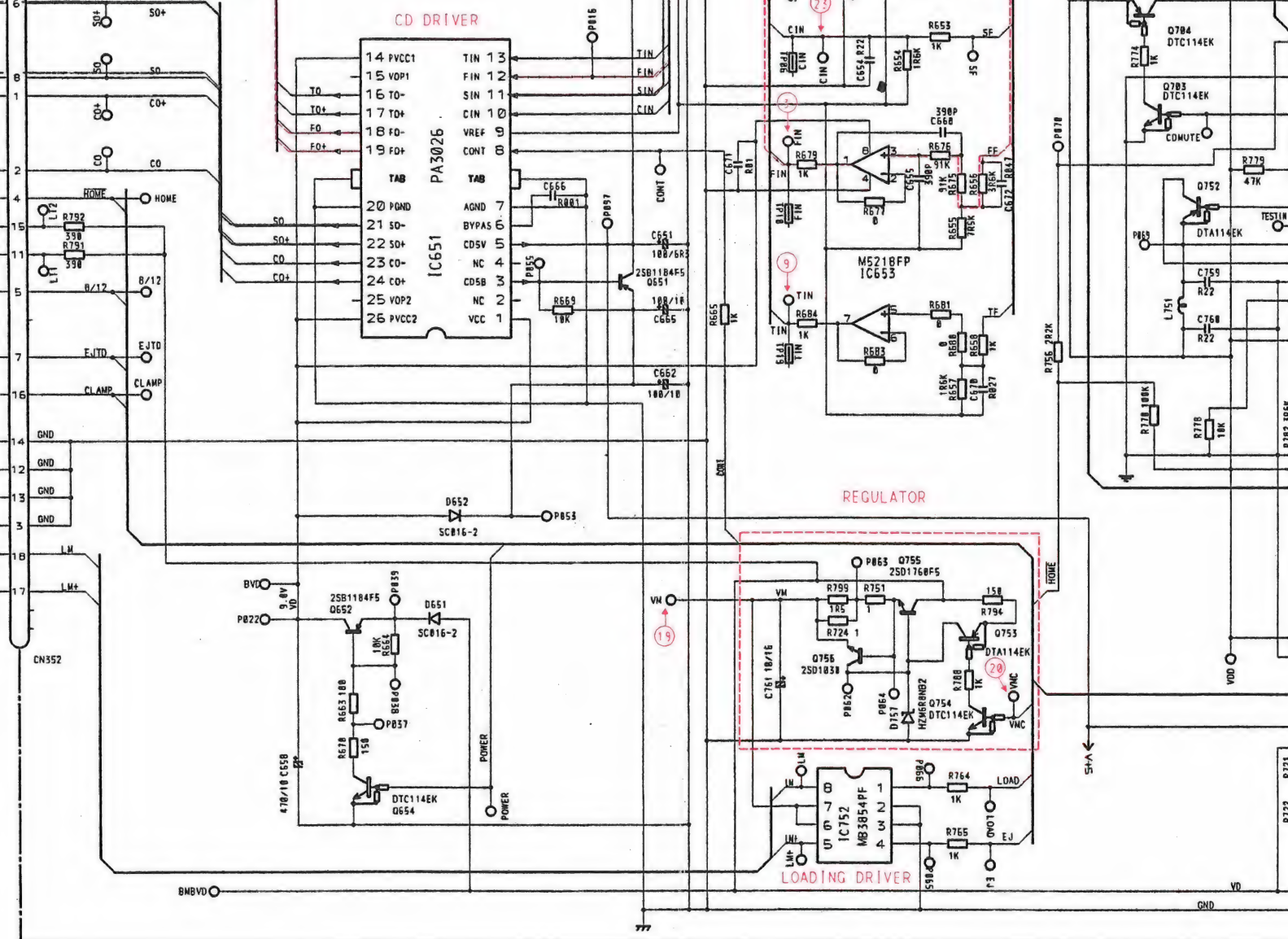Pre.OUT

MUTE

MUTE

DISPLAY UNIT

BUS1

BUS2

LCD:CAW1143

LCD DRIVER

IC901

LC7582E

WIRELESS REMOTE CONTROL
IC903 RS-20

S901-922
CSG1041

S909 EJECT   S922 VOL DOWN   S915 VOL UP

S918   S912 SDK   S911
S904 SHIFT   S919 SOUCE
S902 TRACK UP   S908 BAND   S901 TRACK DOWN
S914   S913
S906 F3   S920 F2   S903 F1

IL901, 902, 909-912
GREEN: CEL-147

IL904-908
RED:CEL1013

ILLUMINATION COLOR SWITCHING

Fig. 46

60

61

5   6   7   8   9

TUNER AMP UNIT

Fig. 50

Fig. 47

Fig. 51

11.4 TUNER AMP UNIT AND DISPLAY UNIT (DEH-690/EW, X1B)

TUNER AMP UNIT

NOTE :
─□─ Symbol indicates a resistor.
No differentiation is made between chip resistors and
discrete resistors.

─╫─ Symbol indicates a capacitor.
No differentiation is made between chip capacitors and
discrete capacitors.

Decimal points for resistor
and capacitor fixed values
are expressed as:
2.2→2R2
0.022→R022

Circuit Symbol & No.	DEH-690SDK/WG DEH-790SDK/WG	DEH-690/X1B DEH-790/X1B DEH-690/EW DEH-790/EW
IC 705	DELETE	TC74HC74AF
C 729	DELETE	R1
R 714	DELETE	0R0
R 715	0R0	DELETE

IC705
TC74HC74AF

UPD6375GC
IC701
DIGITAL SIGNAL
PROCESSOR

IC702 TC9237F
D/A
CONVERTER

IC703 TA2009F
LOW-PASS
FILTER

PD5156B
IC751
MECHANISM/SYSTEM
CONTROLLER

TO TUNER AMP UNIT

Fig. 54

88   89

5   6   7   8   9

❶ PIONEER®
The Art of Entertainment

• DEH-790SDK/WG

HIGH-POWER COMPACT DISC PLAYER WITH FM/AM TUNER

WG

DEH-690SDK WG
DEH-690 EW, X1B

COMPACT
disc
DIGITAL AUDIO

• **See the service manual DEH-M980/UC (CRT1450) for the CD mechanism description and circuit description.**
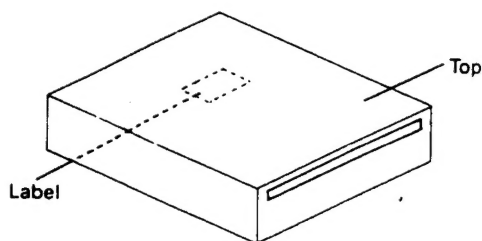
CONTENTS

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SAFETY INFORMATION (EW MODEL)

1. Safety Precautions for those who Service this Unit.

• Follow the adjustment steps(see pages 14 through 33)in the service manual when servicing this unit. When checking or adjusting the emitting power of the laser diode exercise caution in order to get safe, reliable results.
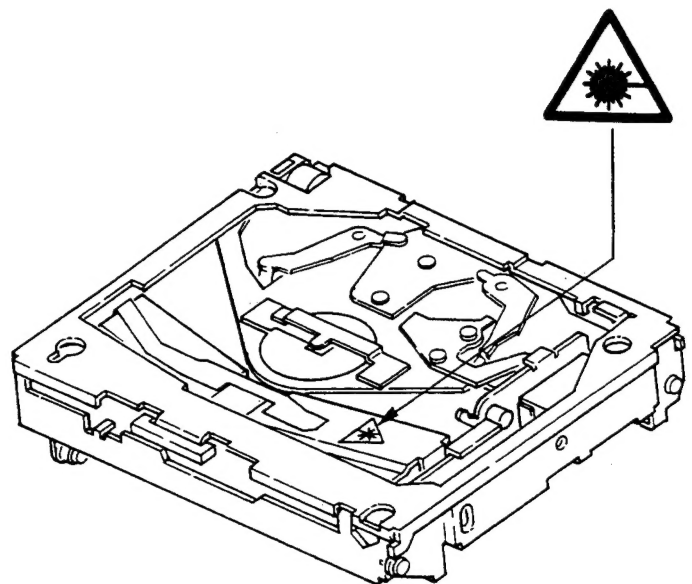
Caution:

    1. During repair or tests, minimum distance of 13cm from the focus lens must be kept.

    2. During repair or tests, do not view laser beam for 10 seconds or longer.

2. A "CLASS 1 LASER PRODUCT" label is affixed to the bottom of the player.

3. The triangular label is attached to the mechanism unit arm unit.

4. Specifications of Laser Diode

Specifications of laser radiation fields to which human access is possible during service.

    Wavelength   = 785 nanometers

    Radiant power   = 69.7 microwatts
                      (Through a circular aperture stop
                      having a diameter of 80 millimeters)

                      0.55 microwatts
                      (Through a circular aperture stop
                      having a diameter of 7 millimeters)